THE STONE IMPLEMENTS OF SOUTH AFRICA

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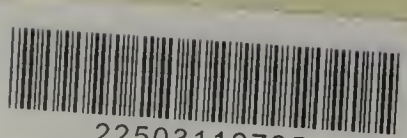

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BY

J. P. JOHNSON

SECOND EDITION
REVISED and ENLARGED

WITH ILLUSTRATIONS

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PREFACE TO FIRST EDITION.

THE object of this little volume is to co-ordinate the various discoveries of Stone Implements that I have made during the last four years—discoveries that I venture to think, mark a new era in our knowledge of the Stone Age of South Africa. No attempt will be made to review the abundant, but unsatisfactory, literature already in existence.

The typical Palæolithic (Acheulic) implements are here used as a datum line. All groups below that standard are classed as "Primitive," all groups above it are spoken of as "Advanced." My definition of the terms Eolithic, Palæolithic and Neolithic requires a word of explanation. Although they are now universally employed, the sense in which they are used is very far from uniform. Stone implements like all other things, show a progressive evolution from very primitive to very advanced forms. The terms Eolithic, Palæolithic and Neolithic are expressive of certain stages in that progress. In the restricted sense in which they are used by me the three stages are represented by the groups met with in the plateau gravels, valley-drifts and alluvial flats of the extreme south of Britain respectively.

I am glad to have this opportunity to acknowledge my indebtedness to my friend, Professor R. B. YOUNG, of Johannesburg. Many of the more interesting discoveries described herein were made during an expedition as his guest. To him anthropology—of which I account myself a humble student—is under deep obligation.

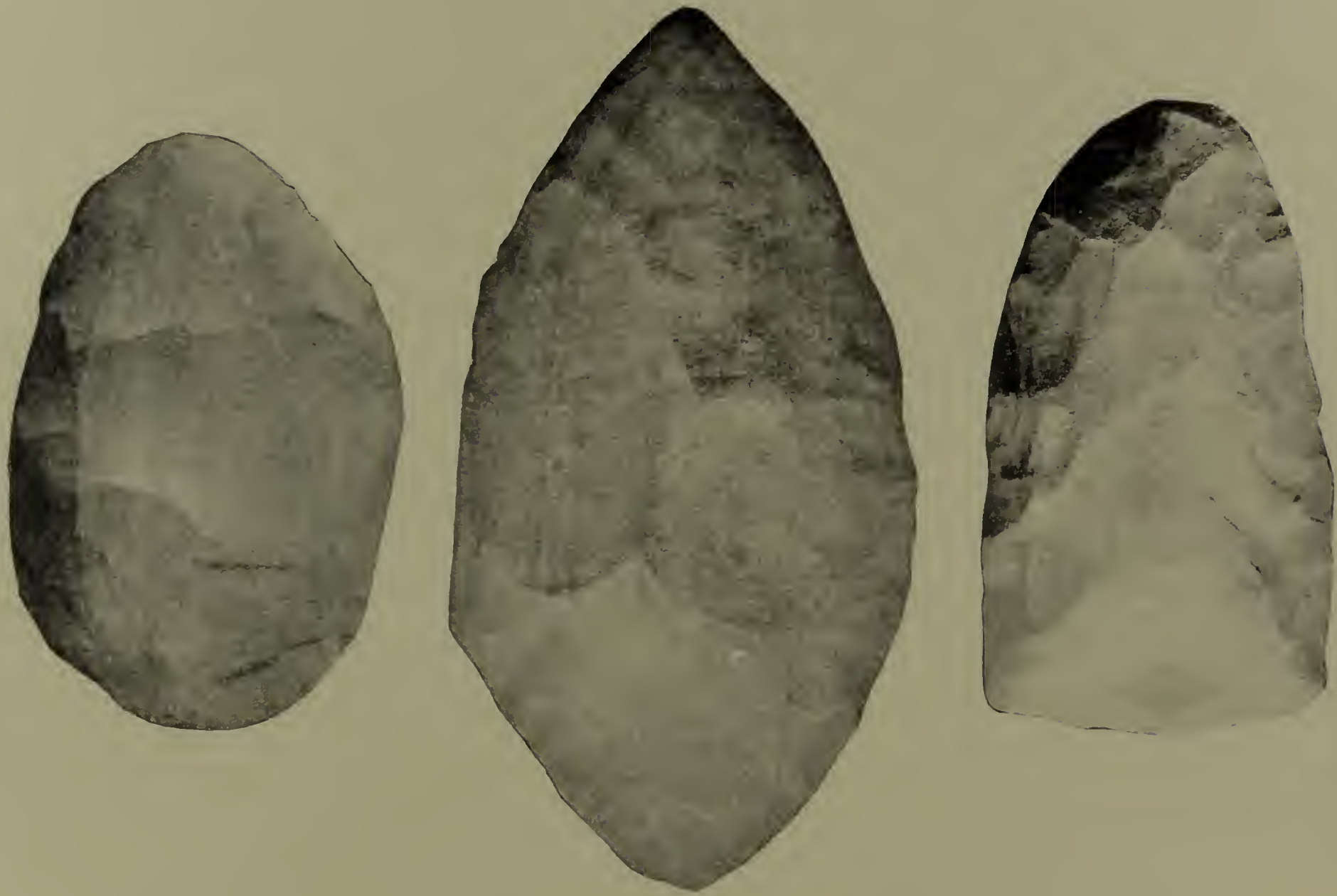
All figures are of the same size as the originals.

PREFACE TO SECOND EDITION.

IN this edition I have included some further discoveries and have added a number of new illustrations. The arrangement of the data remains the same, but a closer classification of the different groups has been deemed desirable. I have therefore replaced the somewhat comprehensive terms Primitive, Palæolithic and Advanced, by the current European nomenclature, Eolithic, Strepyic, Palæolithic or Acheulic, Solutric and Neolithic.

P.O. Box 6231, JOHANNESBURG.

May 1908.



PALÆOLITHIC IMPLEMENTS. EMBABAAN, BARKLY AND VEREENIGING. *(Actual size.)*

THE STONE IMPLEMENTS OF SOUTH AFRICA.

CHAPTER I.

INTRODUCTION—EOLITHIC GROUP.

In describing my "finds," I shall take them in the order they occupy in the scale of culture, beginning with the most primitive assemblages, and leading up gradually to the most advanced. It is well to bear in mind, however, that the order of culture is not necessarily the order of age. The latter is essentially a problem for the geologist, and a brief account of the data requisite for the determination of the relative age of different groups of Stone Implements may therefore form a not inappropriate introduction to the subject proper.

When one finds a sharp and fresh-looking implement lying on the ground, one naturally receives the impression that it is very recent; conversely, a much worn implement gives the impression of being ancient. But neither is necessarily the case. Much depends upon the material of which the implement is composed. A chert implement will remain unchanged where an aphanite specimen will be weathered to a pebble. Much more depends on surrounding conditions.

On ancient plateaux, where there has been little denudation, but merely superficial disintegration, or in extremely flat country intersected by only a few streams, stone implements of very great age may be found resting upon the present surface, and affording no evidence of their antiquity. But under more ordinary conditions and in more dissected areas, they will be found buried in the talus that accumulates at the foot of hills, or in the drift that

is laid down in the valley bottoms, both of which types of deposit may supply good proofs of their antiquity. The best evidence, however, is afforded by river terraces.

A river in the course of its excavating career frequently leaves strips of drift behind on the sides of the valley it scoops out. Usually it has alternating periods of excavation and deposition—that is, after excavating the valley to a certain depth, it proceeds to deposit gravel or other sediment in it for a time, after which it begins to excavate again, and so on. Normally the new channel does not occupy the whole width of the valley-bottom, so that a strip or terrace of drift is left behind on one or both sides. Wherever there is a succession of such terraces it follows that the highest is the oldest.

Further, owing to the protection from denudation afforded by gravel to the underlying rocks, it often happens that the ancient river terrace eventually comes to occupy the top of a ridge, and is finally reduced to a mere capping to one or more hills. Patches of river drift occupying the tops of hills are necessarily very ancient..

Contemporary objects, such as stone implements and bones of animals, found in a hill-gravel, will therefore be more ancient than those found in the valley-drifts of the same drainage-area; and those from the high-level terraces will be older than those from the low-level terraces.

The value of the evidence afforded by river terraces is well illustrated by a luminous little paper by my friends Messrs. Hinton and Kennard, published in the *Proceedings of the Geologists' Association of London, Vol. XIX.* It should be consulted by all who are not already well acquainted with the British succession.

Leijfontein, Herbert.

In several places on the farm Leijfontein, which is situated below the Campbell Rand near Campbell, there are patches of gravel lying at the foot of the escarpment. This gravel consists mainly of subangular fragments of jasper—a material that has travelled a long way, the nearest source being the Asbestos Hills, some thirty miles to the west. While it apparently can only

have been brought to its present position by water, it has no evident connection with any existing river, and is therefore probably of very great antiquity. The jasper has changed externally from its original dull brown colour to a yellowish-brown, and acquired a high glaze or polish.

Mixed with the gravel are quantities of much worn and highly glazed Eoliths. A few of these are a little more advanced than the true Eoliths, being made from artificially produced splinters *(flakes)*, but they are a small minority. Otherwise the group is in every way identical with the typical assemblage met with in the early plateau drifts of southern Britain.

Although attention was drawn by Prestwich to the hacked or rudely chipped stones discovered by Benjamin Harrison, which are now termed Eoliths, as far back as 1889, their origin—whether artificial or natural—is still the subject of controversy. While some authorities unreservedly accept them as the work of man, others are equally emphatic in denying their artificial character.* The specimens from Leijfontein throw considerable light on this matter, and their testimony, in my opinion, is only capable of one interpretation—namely, that they are in truth primitive man's first attempts to trim pieces of stone to a useful shape.

The Leijfontein Eoliths and Flake-Eoliths may be subdivided in the same way as Prestwich divided the typical Eoliths—that is, into two sub-groups: (1) Those in which the pieces of stone have been subjected to very little modification; and (2), those in which they have been chipped into definite shapes.

It would be difficult to recognise the artificial character of the implements of the first sub-group if found alone. Their great abundance and the haphazard appearance of the chipping immediately suggests that they have been shaped by the blind forces of Nature. Both circumstances have been brought forward as evidence against their artificial character. Nevertheless Palæolithic and Neolithic implements are often met with in equal quantity, while, if the Eoliths are, as is claimed, man's first artefacts, one would expect them to be barely distinguishable

* At the last (1906) International Congress of Prehistoric Anthropology and Archæology, the members were unable to come to an agreement on this question.

from Nature's work. Their association with others in which the trimming, though of the same rude kind, is arranged in definite patterns is the sole ground upon which they can be accepted.

Even the better defined implements of the second sub-group are of so primitive a kind that their artificial character is still disputed by some. Yet, apart from the necessarily inferior quality of the trimming and the fact that most are fashioned out of naturally broken fragments of stone, they are identical with the commoner accepted flake-tools of the Palæolithic and Neolithic periods.

Two series of the more differentiated Eoliths and Flake-Eoliths, and a set of late (post-Cissbury) Neoliths, for comparison, are represented by the accompanying illustrations (Figures 1, 2, and 3).

Figure 1 shows a series of straight, concave and convex-edged scrapers. A, B, and C, are true Eoliths, while D, E, and F, are Flake-Eoliths. A and D are good examples of the concave scrapers. It will be noticed that there is quite a wide difference in the quality of the workmanship of these two. There is a still greater difference between the better of these and the Neolithic example D (Fig. 3). I have South African Palæolithic specimens, which, in point of workmanship, fill the gap. There is no essential difference between the disputed Eolithic examples and the accepted Neolithic ones. D, C, E, and F, are four commonly recurring varieties of scraper, usually designated by the really descriptive adjectives, circular, rectangular, long and broad. All of these can be matched by Palæolithic and Neolithic examples, while one is still to be counted among the domestic appliances of certain savage peoples. Compare the circular scraper with the Neolithic specimen B (Figure 3). Here, again, I can produce South African Palæolithic specimens intermediate as regards quality of workmanship. This evolution in delicacy of finish is carried a stage further in some beautiful little examples found among the Riverton series, described in a later chapter. They are about one half the diameter of the Neolithic example.

Figure 2 shows an extremely interesting series of implements. They are very typical of the Eolithic stage of culture, being

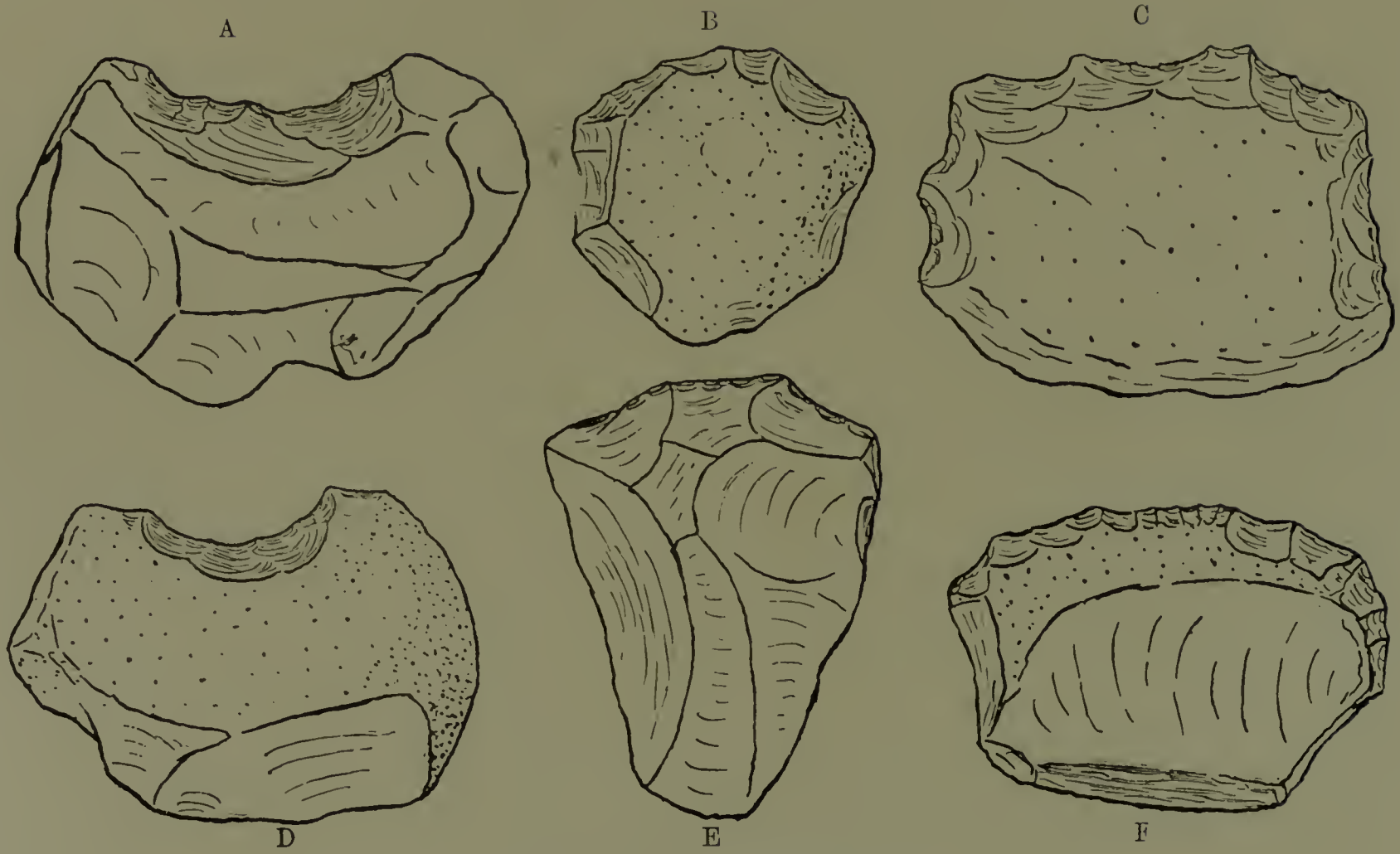


Fig. 1.—LEIJFONTEIN.

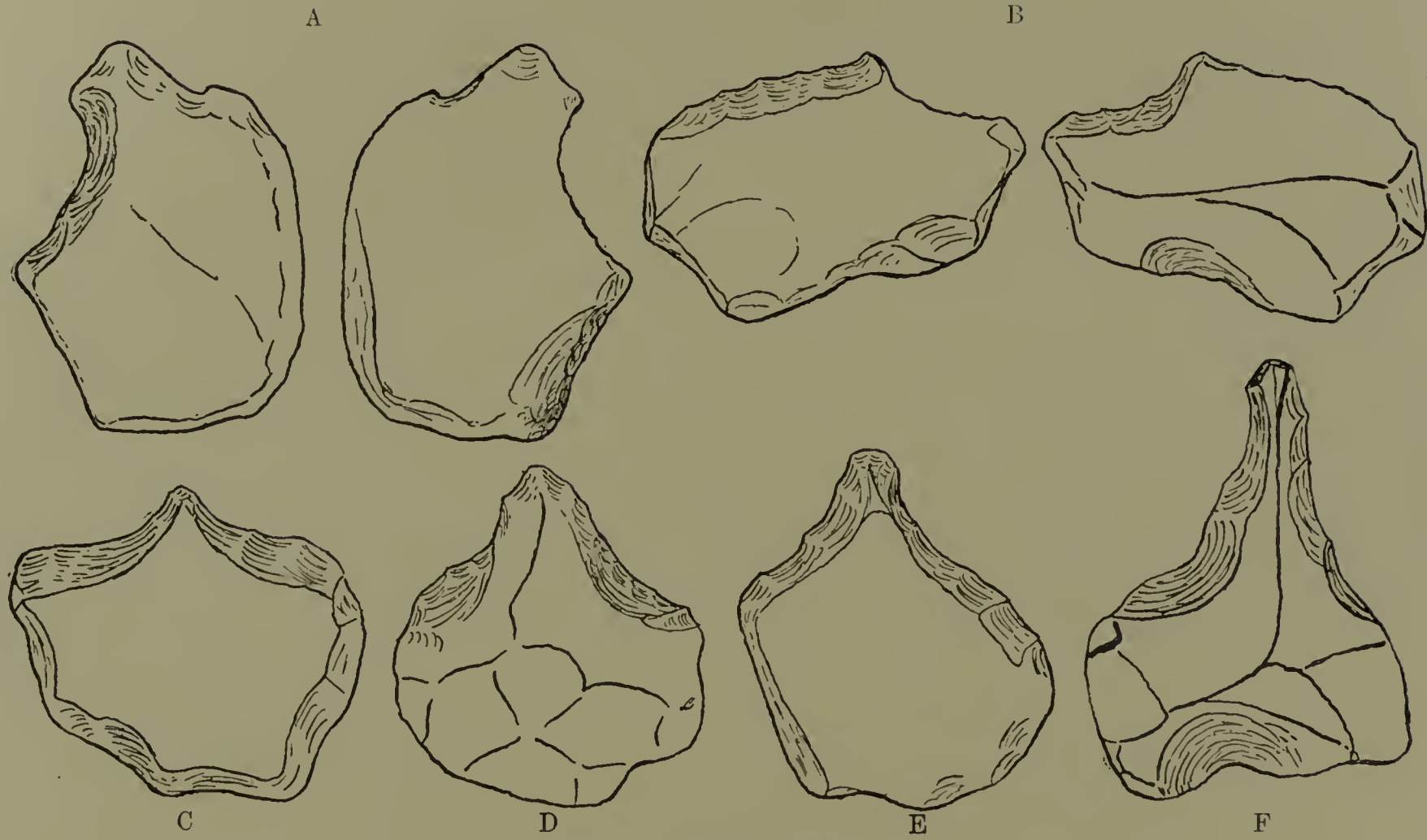


Fig. 2.—LEIJFONTEIN.

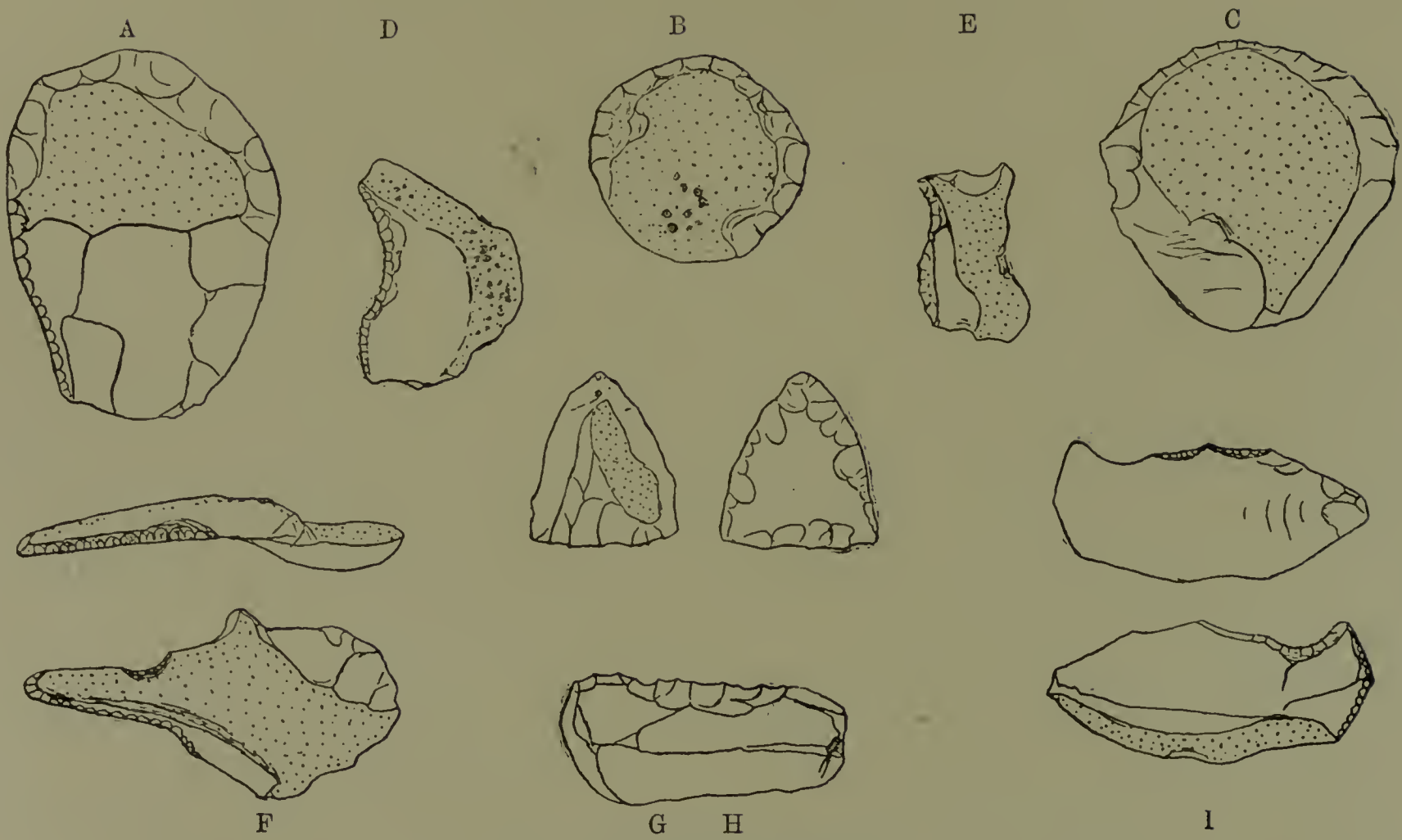


Fig. 3.—SUTTON, BRITAIN.

rarely met with in more advanced assemblages. They are probably all scrapers. A and B are double-edged scrapers. It will be noticed that the chipping of the one edge is in the reverse direction to that of the other. C, D, E, and F, are very similar implements, but both edges are chipped on the same side. They are an eloquent testimony to the artificial character of the Eoliths. It is incredible that a long tapering point, like that of F, could be hacked out by blind agencies.

CHAPTER II.

TRANSITION (STREPYIC)* GROUPS.

The three series of implements described in this chapter are of special interest, in that they present an assemblage intermediate between the Eolithic and Palæolithic groups as defined by me.

Mambivlakte, Hay.

By the homestead on the farm Mambivlakte there are three flat-topped hills of quartzite—one to the north, the other two to the south of the road. On the middle one, and probably on the others also, there is a covering of dark-coloured jasper, chert and ironstone gravel, containing numerous glazed Flake-Eoliths, mostly of brown and yellowish-brown jasper, like those from Leijfontein.

Roode Kop.

On the top of this hill, which is situated on the southern edge of the Witwaters Rand, south-east of Johannesburg, are sundry patches of drift, consisting mainly of small boulders and more or less angular pieces of quartzite, from which I have obtained a number of quartzite implements.

They bear a very great resemblance to the true Eolithic implements, but are mostly fashioned from flakes. They are thus in advance of the Leijfontein assemblage. All the more differentiated forms were met with, including the characteristic double-edged (pointed) scrapers. They are all worn. Associated with them and in the same condition of wear were rough discs and pieces of quartzite worked to an edge.

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* Strepyic : "Transition de l' Éolithique au Palæolithique," Rutot, Bulletin Société Belge de Géologie, XXI, p. 50 (1907).

In addition to the above, the deposit yielded a quantity of quite sharp and fresh looking flakes as well as one or two similarly unworn implements suggestive of unfinished and primitive Palæolithic types.

Kameelfontein, Hay.

On the farm Kameelfontein there is gravelly debris like that at Leijfontein, containing worn glazed jasper Eoliths and flakes with an Eolithic style and quality of trimming. Of these, however, the latter amount to more than one half of the total implements, so that the general assemblage is in advance of that of Leijfontein.

Further rude chipped discs and flat, more or less circular, pieces of stone with an edge worked along part of the periphery also occur. These last are worked in the same way as the typical Palæolithic implements, by alternately striking a chip first off one face and then off the other. They are evidently the initial stage in the evolution of that class of implement. Some of the specimens I collected are in fact primitive examples of the typical Palæolithic implements, and leave no doubt in my mind as to the origin of the latter class of implement.

Lying on the same surface, but in striking contrast to these worn and primitive Palæoliths, were some quite sharp and fresh-looking examples of very advanced form and finish. They are of chert and jasper, and comprise both almond-shaped and axe-head types.

* * * *

If, as I at one time thought, the gravels of Roode Kop and Mambivlakte are of undoubted fluviatile origin, then the contained implements must be of very great antiquity. On this point, however, I am not now so certain.

Plateau and hill gravels are not all remnants of water-borne deposits. Often they are the result of superficial disintegration. In course of time the at first angular constituents of such accumulations become more or less rounded and acquire a water-worn appearance.

Usually there is little difficulty in recognising a water-borne gravel, but in some cases its aqueous origin is not so apparent. Sometimes it is impossible to decide whether a plateau or hill gravel is of fluviatile origin or whether it is merely a product of surface disintegration.

Contemporary implements found in plateau or hill gravels of fluviatile origin are, as already pointed out, necessarily very ancient, but those found in disintegration gravels may obviously be of all ages.

The balance of probability remains, however, in favour of the two above-described occurrences being stream deposits and hence of the contained implements being of very great antiquity, while the older implements from Kameelfontein are certainly equally ancient.

There is no geological data available for determining the age of these implements relative to the Eoliths of Leijfontein on the one hand, or to the Palæoliths of the river gravels on the other. Their more advanced facies makes it probable that they are newer than the Leijfontein Eoliths, while the finds at Kameelfontein show them to be older than some at least of the typical Palæoliths.

CHAPTER III.

PALÆOLITHIC (ACHEULIC) GROUPS—VALLEY OF THE ZAMBESI.

The well-known tongue and almond-shaped Palæolithic implements are widely distributed over Southern Africa. They have readily attracted the attention of the curio collector, so that isolated specimens are now known from many parts—reaching from the South Coast to the Zambesi. Such isolated examples, usually with vague location and invariably without record of the conditions under which they were found, are of little value from an anthropological point of view.

Taking the assemblage met with in the valley-drifts of Southern Britain, which is so beautifully and profusely illustrated in Evans' work on *Ancient Stone Implements* (2nd Edition), as typical, it is noticeable that though the general facies of the groups about to be described is unmistakeably the same, the majority of the individual specimens differ in having the edge continued right round the butt of the implement. They may be spoken of as "almond-shaped." These almond-shaped implements exhibit a considerable range of variation, but the time is not yet ripe for a detailed classification of them.

Associated with these are implements which, though possessing the characteristic Palæolithic style and quality of workmanship, are of a type that is at least rare in, if not quite absent from, the typical assemblage. They have been termed chisel-edged implements, and are true axe-heads. They present a great deal of variability, but two varieties stand out very prominently, namely, (1) a form consisting of a broad rectangular blade like

that of the ordinary modern axe used for tree-felling; and (2) a form with a narrow blade and rounded top, similar to the common and well-known Neolithic type.

Examples of the scraper group of implements are not well represented in my collection. The reason for this is not difficult of explanation. Occupying a midway position between the Eolithic and Neolithic scrapers, which essentially only differ from one another in quality of workmanship, they are difficult to distinguish from either, unless accompanied by the typical implements. But the conditions under which the large typical implements are preserved are seldom favourable to the preservation of the smaller flake tools.

No doubt many of the scrapers one sees in collections referred to the Eolithic and Neolithic periods of a particular country, really belong to the Palæolithic. Unskilled or inexperienced Palæolithic workmen would often produce tools of an Eolithic quality, just as exceptionally skilled Palæolithic workmen would sometimes make tools of Neolithic quality. An instance of this is afforded by the extremely interesting series of scraping tools about to be described.

Victoria Falls.

Probably one of the most important discoveries of Palæolithic implements that has been made in South Africa, is that in the gravels at the world-famed Victoria Falls on the Zambesi. The full significance of the discovery will best be gathered from the following extract from a most suggestive letter by Feilden to *Nature*: "Above the Victoria Falls, on the left bank of the river, near the Ferry to Livingstone Island, the river gravels are well in evidence. They consist of rounded pebbles of chalcedony (chert), quartzite, and various other rocks; the contained implements are more or less water-worn, and of the same character as those in the gravels below the Victoria Falls. I took from this horizon implements of Palæolithic type.

"When we pass below the Victoria Falls to the Rain Forest, we can realise without doubt that the Zambesi once flowed over this area, and that its southern cliff must once have been the

falls of the river. In the water-worn gullies of the Rain Forest, implements and rounded pebbles are to be found of the same character as those in the beds above the Victoria Falls; they must have been deposited there by the river when the Rain Forest area formed part of its bed. When we travel further down the course of the old river bed, we find on the platforms and promontories of the basalt, now eroded by deep lateral ravines, which overlook the zigzags of the canyon, where the Zambesi rushes 400 feet below, deposits of implement-bearing gravel. We cannot, therefore, escape from the conclusion that these implements and pebbles were deposited there by the Zambesi when it flowed over these surfaces prior to the excavation of the chasm. From these surfaces I took implements, some of which, if found in Europe, would be called typical Palæolithic types."

Mr. Lamplugh, who made a special investigation of the Zambesi Valley around the Victoria Falls, on behalf of the British Association for the Advancement of Science, has contributed a valuable account of these gravels and the associated implements to the *Journal of the Anthropological Institute*, Vol. XXXVI, pp. 159—169. As a geologist of eminence his observations demand careful consideration. The following abstract of his paper is a fair presentation of his views :—

"I first found the implements near Victoria Falls on the low ground bordering the eastern side of the river, between it and the new railway. The worked stones occur here very abundantly upon the low bosses of weathered basalt that rise slightly above the alluvial soil of the flat in the angle between the Zambesi and its tributary the Maramba, which flows to it from the north and has its confluence some two miles above the Falls. Along the line of the railway the rocky ground continues to be richly implementiferous up to the edge of the grassy flats of black loam that intervene as we approach the place where the railway crosses the Maramba: and a large proportion of the specimens in my collection were obtained from these sites.

"The implements were mostly found interspersed among rounded pebble-like stones of similar materials that were sprinkled freely over the rocky surfaces: and as some of the implements

themselves are more or less worn and are generally highly glazed, the whole assemblage looked not unlike a scantily developed river-gravel. . . .

"Near the landing place at the lower ferry on the western bank of the Zambesi, three-quarters of a mile above the Falls, a narrow loamy flat adjacent to the river has been trenched in places by shallow rain-gullies, which reveal some patches of gravel beneath two or three feet of loam. In these gullies I found a few worked flakes which had evidently been derived from the gravel, but did not discover any of these actually in situ.

"Below the Falls I found the flaked stones in plenty on the ancient river flat bordering the edge of the gorge on both sides, and here again they were nearly always associated with patches of thinly sprinkled chalcedonic and cherty detritus. I surmised at first that this gravelly material might be simply a residuum of the durable amygdales remaining nearly in place after the rotting away of amygdaloidal basalt, but further examination showed that, at any rate in some cases, this could not be so. . . . In these places the gravelly detritus had evidently undergone transportation, and probably by the agency of the Zambesi itself before the adjacent portion of the gorge was cut out. In a few instances, however, there was an alternative possibility that the transport may have been effected by tributary streams.

"On the northern side of the river, scattered patches of this detritus, always associated with flaked stones, occurred frequently in the first nine or ten miles of our journey along the Batoka gorge, and numerous implements were collected from it between the Falls and the Songwi river, six miles distant, and again between the Songwi and the Kapandi river, three miles farther eastward.

"On the opposite or south-western side of the gorge, patches of cherty and chalcedonic detritus, yielding many implements, occur here and there for at least five miles below the Falls, beyond which I had no opportunity for examining the plateau bordering the river. A readily accessible site in this quarter is the narrow flat-topped spur between the sharp zigzag of the gorge, about a mile south east of the Falls hotel, and here I

found a few well-rounded pebbles along with the usual shapeless subangular fragments and the chipped flakes. . . .

"One fresh-looking chip was collected near Wankies drift, some 75 miles distant from the Falls, where we again reached the Zambesi. . . .

"Beside any strictly archæological evidence that may be afforded by the workmanship of the Zambesi implements, which I am not qualified to discuss, there are other factors to be taken into account in considering the question of the antiquity of these 'edged-stones' which I propose briefly to recapitulate.

"The first and most important of these is whether the implements form an integral part of the gravelly detritus with which they are associated, or whether they have been shaped subsequently to its deposition. . . .

"If the implements that occur on the top of the spurs between the zigzags, and corresponding situations for several miles below the Falls, were indeed deposited there by the river when it still flowed over these sites, they must be of very great antiquity. The state of preservation of the implements, though favourable to this supposition, is not in itself convincing. Some . . . are so much worn as to suggest that they had been rolled along the river bed: and must have had the sharp angles of the original chipping more or less smoothed or blunted. But this blunting may have been done in part at least, by the same agency that produced the wonderful burnish or glaze that is so remarkable on many of the specimens, which cannot, I think, be assigned to the direct agency of the river, but has probably been caused by some subaerial operation. . . . It seems probable that the phenomenon is akin to 'desert-varnish' with which the waterworn rocks of all the stream beds of this region are glazed, and that it represents a thin mineral film deposited by evaporating moisture which carried mineral substances in solution. . . . However, even if the blunting of the chipped stones be assignable to this process and not to direct river wear, it must still surely have been a slow process, and must indicate a considerable antiquity for them.

"As already remarked, it is unfortunate that the curiously

scanty development of river gravel in the region almost precludes the chance of obtaining direct stratigraphical evidence. In the one instance where such evidence was available—viz., that at the Maramba above described, there was no doubt that the implement was actually embedded in the river-gravel, but it was not possible to prove with certainty that the gravel was very old, since it still forms part of the existing river flat. It should be noted that this implement has its chipping quite freshly preserved, and is neither worn nor polished, which lends some support to the idea that the peculiar condition of the surface specimens is due to some subaerial agency.

"Setting aside the condition of the implements, it might perhaps be possible, in the case of those found above the Falls and in the tributary valleys, to explain their present position by supposing that the ancient inhabitants of the country, when they needed tools, resorted to the places where suitable stone was plentiful, and there prepared, used and discarded the implements. It is certainly remarkable, how often, in different parts of the world, we find worked stones abundantly near the spot where the raw material occurs, while where such material is absent in neighbouring districts apparently as suitable in every respect for human occupation, they may be quite rare. . . . But I do not think that this supposition can be applied to the sites in the extremely rugged ground bordering the gorge below the Falls, where in the dry season there is no accessible water, and, so far as I could judge, no better material than that of the more convenient sites to induce the native to establish his working places there.

"Taking the whole evidence into consideration I therefore lean to the opinion that most of the implements were left in their present position when the Zambesi flowed in its higher valley for some distance below the present Falls. At any rate, the facts are sufficient to justify a more thorough investigation of the subject than I was able to undertake."

Mr. Lamplugh's paper is accompanied by plans of the country surrounding the Falls, and by an excellent reproduction of a photograph of a group of flake-tools from the gravels. Mr. Balfour

in a note,* in which he describes a typical tongue-shaped implement from the Victoria Falls gravels, remarks :—

"Below the Falls, on the plateau which originally formed the bottom of the wide Zambesi valley, and through which the deep Batoka gorge has been cut, I found quantities of artificial flakes and rudely worked implements of chalcedony and other stone considerably patinated in most cases. Of these, some were almost as sharp as they were when freshly made, and do not convey the impression of great antiquity : others on the contrary, show evidence of considerable attrition by rolling, caused, no doubt, by river action, and appear to have been brought down from a distance by the river, and deposited by it on the spot where they are now found. It seems to me difficult to account otherwise for their abrasion, but if their presence upon the bare rocky expanses some 300 or 400 feet above the present level of the river in the gorge, is due to their having been so deposited by the river when it was still flowing at this high level—the same as that of the river above the Falls—the evidence of their great antiquity is manifest."

Speaking of the typical tongue-shaped implement specially dealt with in the note, he says :—

"We have here an example of an implement taken from an ancient river deposit of the Zambesi, of which the patination and abraded surface point to a considerable antiquity, and the form and manufacture is pre-eminently characteristic of the implements of the (Palæolithic) river-drift period of Western Europe." A statement which is fully borne out by the beautiful illustration which accompanies the note.

It was from a small patch of this gravel on the south side of the canyon that I obtained the interesting series of scraping tools already alluded to. They consist of pieces of chert and chert flakes with an Eolithic style and quality of trimming, and were associated with rude discs of the same material. Five of the more differentiated kinds are shown in Figure 4 (A, B, C, D, and H). Considered by themselves, they belong to the transition between the Eolithic and Palæolithic stages of culture, but

* H. Balfour, "Journal Ant. Institute, XXXVI., pp. 170—171 (1907).

FIG. 4.—VICTORIA FALLS AND LANGE BERG.

the discoveries of Feilden, Balfour, and others show them to be merely backward or makeshift examples of the work of the Palæolithic period. This distinction between the stage of culture and the age of a group of such tools is an important one. A single example or even a few of these non-typical implements, when considered alone may, on account of their poor workmanship, be referred to the Eolithic stage; when considered in conjunction with a series of associated specimens of better finish, they may be referred to the Palæolithic stage; while the discovery of typical forms with them may even show the same implements to be of Neolithic age.

The survival in Palæolithic times of tools of such a marked Eolithic stamp as the Victoria Falls specimens, is another eloquent testimony to the artificial character of the true Eoliths. The three examples from the Lange Berg, which are shown in the same Figure (E, F, and G), and which will be referred to later, tell the same story; while yet another testimony to the same effect is offered by the scrapers, which will shortly be described, from the Vaal River deposits of Droogeveld.

Mr. Mennell has described a typical tongue-shaped Palæolith from near the Victoria Falls in a *Report* of the Bulawayo Museum, and Mr. Randall-Maciver figures one in his work *Mediæval Rhodesia* (Plate XII, No. 50), as well as three from the Charter district.

CHAPTER IV.

PALÆOLITHIC (ACHEULIC) GROUPS—TRIBUTARIES OF THE LIMPOPO.

Elands (Rustenburg *) River.

On the high ground on the south side of the Elands River, on the farm Klipplaat, there is probably an old terrace gravel hidden beneath the surface soil. Remnants, at least, occur in the shape of well-rounded pebbles and small boulders of quartzite. Some of these last have been roughly chipped into the form of tongue- and almond-shaped implements, but I did not find any completed examples.

Magalakwin River.

I obtained a small series of typical Palæolithic implements from the farm Delagoa situated on the left bank of the Magalakwin River. They were found in a donga, having been washed out from beneath a few feet of surface debris. The deposit has no connection with the river. The implements are suggestive of a rather advanced stage of Palæolithic culture.

Selati River.

About three hundred yards east of the Selati River, at the point where it is crossed by the road from Leydsdorp to the Mashushamala, one arrives at the foot of a broad and evidently very old terrace of river gravel. It is made up of well-rounded pebbles of quartzite. There are no sections in it. A closer examination of the pebbles exposed at the surface shows that

* Not to be confounded with the Elands River of the Pretoria district.

90 per cent. of them have been artificially chipped, the object of the stone workers clearly having been the manufacture of the typical tongue or almond-shaped Palæoliths. They are without exception very much worn. They are all rejects, not a single finished specimen being found, though I made a lengthy search. Their extraordinary abundance is attributable to the unsuitability of this particular kind of quartzite for the purpose. Their very much worn condition suggests that they are contemporary with the deposition of the gravel, and if that is so they must indeed be ancient. I am not quite sure, however, that long exposure on the surface to weathering agencies might not blunt the edges of even such a refractory stone as quartzite, in which case the implements may have been made subsequently to the laying down of the gravel. It is a problem that can only be solved by making a section through the terrace.

Olifants River.

On the farm Kameeldoorn, situated on the right bank of the Olifants River, north of the village of Middelburg, I came across a deposit containing large quantities of primitive or unfinished examples of the typical Palæolithic implements.

A good section of the deposit is exposed in the side of a sluit at the point where the road abuts on the river. It shows fifteen feet of well-rounded and closely packed boulders, bound together by a little interstitial loam, and has the aspect of a talus rather than of a river deposit, though the nearest hills are more than a mile away.

The implements consist of rude specimens of the tongue-shaped type, and of wedge-shaped pieces of stone consisting of large flakes that have been trimmed into rectangular forms. The latter are clearly primitive examples of the broad variety of the axe-head type. Most are of quartzite, but some are of granite, while others are of aphanite. One of these last shows very little sign of wear, but all of the others that I examined, including those of hard quartzite, were much worn.

On the adjoining farm Kalkfontein I picked up, among similar

detritus, a rough tongue-shaped implement, as well as the greater part of a neatly finished example of the almond-shaped type.

In the unsurveyed country between the farms Kalkfontein and Varkenskraal, there is a large spruit, in the bed of which I found a very much waterworn example of the axe-head type. This was at the junction with the river.

About 150 miles lower down the river, and situated on the left bank, is the farm Parsons. Just east of this the river makes a big bend. The hill in this bend is strewn with small banded jasper-ironstone pebbles which are probably the remnants of an old terrace of the river. Here and there a quartzite pebble of larger size is to be found. Many of these last have been worked into implements, including the tongue- and almond-shaped types as well as the broad forms of axe-head. They are very crude, probably on account of the unsuitability of the particular variety of quartzite, and are all much worn.

Komati River.

On the farm Doornhoek, on the right bank of the Komati River, there is a well-defined terrace of typical fluviatile gravel lying at an elevation of about 150 feet above the present river. It consists of pebbles and small boulders of quartzite and other hard rocks. Among this gravel I found three water-worn examples of the characteristic large Palæolithic flakes, which have every appearance of being contemporary with the gravel. However, for reasons already mentioned in this chapter, it is impossible to be absolutely certain on this point.

CHAPTER V.

PALÆOLITHIC (ACHEULIC) GROUPS—VAAL RIVER DEPOSITS.*

All along the Vaal River there are well-defined terraces. There are usually two, the upper and older one consisting of a thick bed of gravel; the lower and newer one being, as a rule, a stratum of gravelly detritus lying at the base of a varying thickness of alluvial loam. They can be well studied on the north bank between Gong-gong and Delports, where they are well exposed in the numerous pits which have been sunk in search of diamonds.

Droogeveld.

Opposite the north-west beacon of the farm Droogeveld there is a terrace made up chiefly of limestone rubble, with a sprinkling of fine river gravel. From this deposit I obtained numerous much water-worn implements of a greenish-black aphanite, which has weathered reddish-brown on the outside. They would appear to be older than the deposit in which they occur. Many of them consist merely of naturally broken fragments, with a rude and often irregular edge trimming. They are true Eoliths. Most of the specimens, on the other hand, though possessing an Eolithic style and quality of trimming, are much higher in the scale, being made from artificially produced flakes. A large number of these last have been fashioned into a definite and comparatively advanced form of scraper. All are connected by intermediate forms.

I also picked up one of the typical Palæolithic implements on top of the terrace; but, especially as it is somewhat fresher in appearance than the other implements, it must remain uncertain whether it comes from the deposit or not.

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* An account of the Old Gravels of the Vaal River is given by Du Toit in the "Annual Report of the Geological Commission," pp 171—175 (Cape Town: 1907).

In passing through the poort to the north-west, I noticed large numbers of the characteristic Palæolithic flakes in the talus which there covers the bottom, and also obtained several of the typical implements in different stages of wear. If one could trace any relation—and it is quite likely that such exists—between this deposit and the terraces, some useful data would be obtained.

Barkly.

At Barkly, between the bridge and the village, the upper terrace is well exposed in the old diggings. It lies at the foot of a ridge of hills, hence the talus element is predominant, though the river gravel is in evidence throughout. The deposit consists chiefly of small boulders and large irregularly shaped stones, in which, however, every edge and corner has been well rounded off. The most remarkable feature of the bed is the extraordinary abundance in it of the typical Palæolithic implements and associated characteristic large flakes; in fact, they form an important constituent of the deposit. Now, out of all the countless numbers of implements mixed with the heaps of excavated stones, all but a very few are equally rolled, being practically reduced to pebbles. The rolled implements present a facies very like that of the British valley-drift assemblage; but the few sharp implements, on the other hand, are much more advanced both in form and finish, resembling those from Vereeniging. I have come to the conclusion that there are two distinct series: the one probably older; the other perhaps contemporaneous with, perhaps newer than, the deposit.

Professor Beck, of Freiberg, has recorded the discovery of a fragmentary molar of mastodon in this deposit.

Vereeniging.

A large number of implements of Palæolithic type have been found at this locality by my friend Mr. Leslie. Being associated, they constitute a valuable addition to our data respecting the development of that stage of culture in South Africa.

The Vaal in that part has cut a channel deep into the solid rock, and on top of the cliff thus formed, and extending, to my

knowledge, some distance east and west of the village, is an old river terrace consisting of gravel and small boulders embedded in, and overlaid by, loam. There is a small pit in it east of the village where flakes occur in great profusion, and nearly every pebble (which are all of quartzite) has been chipped. They appear to be largely the result of unsuccessful attempts at manufacturing implements. No finished implements have yet been found in this pit.

Mr. Leslie's "find" is some distance west of the village, where long stretches of the terrace have been furrowed and spread out by the rain. There, for many hundreds of feet unfinished implements occur in the greatest abundance, and the flakes produced in their manufacture are to be found by the thousand, while here and there completed specimens were met with. The quartzite seems to have been of too coarse a grain as a rule for suitable working, as nearly all the failures and very few finished implements are in that material, the majority of the good specimens being of a green aphanite. One or two unfinished examples of chert were also found.

It is quite clear that these implements must have been made very close to where they are now found. Many of them are as sharp and fresh as on the day they were made, while obliteration of the sharpness of the facets in others is more often due to weathering, following exposure, than wear.

Examples of both extremes of the typical tongue-shaped implements are to be noted among the Vereeniging specimens. As usual, however, the great majority are almond-shaped. An interesting feature is the distinct foreshadowing of the well-known Solutric types by some aberrant members of this group. The axe-head group is well represented. One example found by myself is so neatly and symmetrically shaped that, but for the evidence of the others, it would certainly have been taken for a Neolithic axe-head, the fact that the edge was obtained by chipping instead of by grinding being obscured by the slight amount of weathering it had undergone. The well-known class consisting of a big flake worked along one face and edge only, is also abundantly represented. I also obtained two or three flake-tools, including the quartzite scraper shown in Figure 5 (D).

FIG. 5.—WITWATERS RAND, TAAIBOSCH SPRUIT, AND VEREENIGING.

Schmidt's Drift.

At Schmidt's Drift I saw many of the large characteristic flakes and some unfinished examples of the typical Palæolithic implements, associated with the upper terrace gravel, and apparently contemporaneous with the same. I also obtained one finished specimen.

Douglas.

At Douglas both terraces and the alluvium overlying the lower one are plainly developed. On the north bank of the river there is a pit in the upper terrace, in which I saw several of the characteristic large Palæolithic flakes. The section shows the deposit to consist of small boulders and well-rounded pebbles. The flakes have the same worn and washed appearance as the other stones.

On top of the terrace I picked up two of the typical Palæolithic implements, but one, at least, looks as though it may have been made and left on the terrace long after the deposition of the latter, while neither necessarily comes from the deposit.

From the lower terrace on the same side of the river I obtained a typical Palæolithic implement. It is somewhat water-worn, and is fashioned out of a green aphanite.

Among the debris on the sides of the hills south of the village I noticed many of the large characteristic Palæolithic flakes as well as a few unfinished examples of the typical implements.

Riverton.

I shall have occasion to refer more fully to this locality in a future chapter. On the south side of the river, both terraces and the alluvium overlying the lower one are well developed. In the lower terrace I noticed several of the characteristic large flakes, and obtained one or two of the typical Palæolithic implements.

Mouth of the Hart River.

On the left bank of the Hart River, at the drift near its junction with the Vaal, numerous shafts have been sunk down to,

and tunnels driven along, the diamond-bearing layer at the base of the upper terrace. The deposit consists of well-rounded boulders in a matrix of much-rolled river-gravel. I saw many of the large characteristic Palæolithic flakes amongst the excavated stones. They were in the same much water-worn condition as the rest of the constituents of the deposit. On one heap I also picked up two of the typical Palæolithic implements, but these are not so much worn and may possibly not belong to the deposit.

Just west of the mouth of the Hart River, I obtained a typical Palæolithic implement, and saw many of the large characteristic flakes in situ in the lower terrace, which here consists of a thin stratum of gravelly detritus, lying at the foot of a cliff of superficial limestone, and overlaid partly by alluvium and partly by a talus of the limestone.

CHAPTER VI.

PALÆOLITHIC (ACHEULIC) GROUPS—ORANGE RIVER, CALEDON RIVER, OTHER VALLEY DRIFTS, SURFACE FINDS.

Orange River.

The Orange River, on the north bank opposite the village of Prieska, is bounded by a terrace of subangular jasper gravel. This gravel is cemented into a hard conglomerate by sand and lime. It is overlaid by sandstone consisting of quartz grains similarly bound together by calcareous matter. I saw many much worn characteristic Palæolithic flakes, as well as a typical implement, in situ in the deposit, but was unable to extract them owing to its hardness. I, however, obtained one very nice, though worn, specimen which had only just been freed by atmospheric disintegration of the matrix. There are many similar jasper Palæoliths, as well as some of quartzite, in the bed of the river, that are evidently derived from this deposit, and of which I brought away some examples.

Caledon River.

On the farm Alpha situated on the right bank of the Caledon, in the Ladybrand district, there is a well-marked terrace bordering the river at an elevation of about 60 feet above its present level. This is strewn with well-rounded pieces of quartzite which possess very markedly the aspect of a fluviatile gravel and which are probably the remnants of an old terrace of the river. Among these pebbles are numerous and, without exception, equally worn flakes of an unmistakeable Palæolithic facies. They are mostly of the same quartzite, but some are of chert, while nearly all are so much rolled that it requires an experienced eye to detect their

artificial character. With them I found a rude, or unfinished, example of the tongue-shaped type and one or two characteristic flake-tools.

Bezuidenhout Valley.

The Bezuidenhout Valley is situated in the Witwaters Rand. The bottom is covered by a stratified drift. The stream that now runs down it, alternately flows over and cuts deep into, this old drift. The section thus laid bare shows coarse sediments consisting of small boulders of quartzite and subangular pieces of quartz, overlaid by dark-coloured loam, and also in the most westerly exposures by peat.

From this deposit I have obtained a large number of flakes and implements fashioned out of quartzite, chert, quartz, and the local green aphanite, including over twenty of the typical Palæolithic forms.

These last are mostly almond-shaped; the others, some of which bear a very marked resemblance to specimens from Britain, probably being unfinished examples. Some of them, including a very neat but much water-worn specimen of blue chert, were found in position in the deposit at a depth of about 6 feet. With the exception of the one above-mentioned, they are all of quartzite.

No decided examples of the axe-head type were found, but some of the specimens are of a very advanced kind.

A number of flake-tools were also obtained. Two of these are shown in Figure 5. A is a skilfully-produced long and narrow chert flake, which may have been employed as a spear-head; while B is a neat concave scraper of quartzite.

It should be noted that all the specimens found in situ come from the coarse sediments in the lower part of the deposit. They are all more or less water-worn.

Krugersdorp Valley.

This valley is also situated in the Witwaters Rand, and the conditions under which the implements occur are exactly similar to those obtaining in the Bezuidenhout Valley.

The bottom of the valley is covered with a varying thickness

of fine carbonaceous loam, at the base of which is a bed of coarse detritus, consisting chiefly of more or less rounded boulders of quartzite and subangular fragments of quartz. The present stream runs down the valley in a series of stages, alternately flowing over and cutting deep into, this alluvium. The implements, which are all water-worn, come from the bed of coarse detritus.

The implements must once have been scattered over the slopes of the Witwaters Rand, and subsequently washed down together with other coarse debris into the valleys during a period of heavy rainfall. Afterwards, more tranquil conditions prevailed, during which the stream channels became silted up; these being in turn succeeded by the erosive activity of the present epoch.

I have only obtained six implements from this locality. A tongue-shaped implement of white quartz is noteworthy, as also is an exceptionally thin and symmetrical quartzite example of the almond-shaped type. More interesting still is a fine example of the broad variety of the axe-head type. In addition to the specimens mentioned above, my friend Mr. Jobling has a worn but well shaped example of the tongue-shaped type from up the side of the valley. It was found on the bed rock under a thin covering of surface soil.

Lange Berg.

On the farm Zoutputs in the Lange Berg, I came across a number of unfinished Palæolithic implements of quartzite, associated with the characteristic large flakes, among debris on the sides and at the foot of a hill. Together with them I found the three interesting flake-tools shown in figure 4 (E, F, and G).

Between Schmidt's Drift and Campbell.

At one place on the road from Schmidt's Drift to Campbell I noticed many of the characteristic large Palæolithic flakes as well as some unfinished examples of the typical implements, associated with boulders embedded in red sandy loam.

* * * *

Before proceeding further, it will be well to briefly consider the bearing of the evidence contained in this and the three pre-

vious chapters, on the question of the age of the Palæolithic implements of South Africa.

The evidence afforded by the Zambesi gravels at the Victoria Falls is indecisive, as also is that of the deposits of the Limpopo tributaries.

The testimony of the Vaal River terraces in favour of great antiquity would be conclusive if we could be sure that the portions in which the implements were found had not been disturbed since originally laid down by the river. During exceptionally heavy rainfalls, gullies might sometimes be scooped out of the terraces and afterwards gradually filled in again, during which process surface implements might become incorporated. However, both Professor Young, who also visited most of the sections, and myself were careful to keep this possibility in mind at the time we examined them, and although such redeposition of the gravel would often be very difficult to detect, we do not think it has happened in these particular instances.

This objection, however, cannot be urged against the cemented terrace gravel at Prieska on the Orange River. Though not possessing so great an antiquity as the upper terrace of the Vaal (being only a little above the level of the present river, and thus corresponding to the lower terrace), it must certainly be very ancient.

The evidence of the Bezuidenhout and Krugersdorp Valleys points in the same direction; while the surface finds in the Lange Berg, between Schmidt's Drift and Campbell, and at Kameelfontein and Delagoa, are not, as I have pointed out in my introductory remarks, necessarily antagonistic to this evidence. The implements found on the top of the Upper terrace of the Vaal, while possibly newer than that deposit, may also, of course, be older than the lower terrace.

We may, therefore, sum up the evidence as being, though not final and conclusive, decidedly in favour of the great antiquity of the Palæolithic Period of South Africa.

CHAPTER VII.

TRANSITION (SOLUTRIC) GROUPS.

Junction of the Riet and Modder Rivers.

The junction of the Riet and Modder Rivers has been rendered classical by Rickard's account of his discovery of Palæolithic implements there. His paper,* "Notes on Four Series of Palæolithic Implements from South Africa," is one of the few papers of any good that have been written on South African stone implements.

"The implements from the Junction were found in the bed of the river immediately below the point where the rivers become confluent, lying either on the bare rock or in small hollows containing a little coarse gravel; I collected upwards of eighty specimens in a few hours, but had to abandon the majority of them on account of the difficulty and cost of transport."

He devotes two plates to them. Plate I shows two typical tongue- or almond-shaped implements. Plate II shows a fine representative of the axe-head type drawn to actual size.

I myself obtained quite a number of both types there, but they were all very much water-worn, being practically reduced to pebbles. I have no doubt that they come from the gravelly stratum at the base of the alluvium† (= lower terrace of the Vaal). This was east of the bridge.

West of the bridge, and some little distance north of the river, I found a great quantity of quite fresh and sharp scrapers of grey aphanite, mixed with flakes and cores. They had been exposed to view by the removal of a thin covering of surface soil.

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* J. C. Rickard, Cambridge Ant. Soc. V. (1880).

† The discovery by Bain of the remains of an extinct buffalo in the alluvium of the Modder River is interesting in this connection.

Nineteen examples are figured in the 1906 *Report of the South African Association for the Advancement of Science.* They are a similar assemblage to that illustrated from other localities in this chapter, and bear a close resemblance to the Solutric implements of Europe. Interesting are the extremely elongate kinds and the variety trimmed at both ends. These implements are unquestionably newer than the alluvium.

Together with them I found three or four chert scrapers, a multiple-grooved cylindrical piece of sandstone, a hemispherical stone with a hole bored to a depth of about one and a-half centimetres from the flat side, numerous ostrich egg-shell fragments, a bead made of same, and the half of a glass bead. This last probably has no connexion with the other objects.

Boshof.

Boshof is an extremely arid district consisting of bare undulating veld dotted with innumerable pans, the only variety being afforded by an occasional bush-covered kopje or randje.

I have three typical tongue- and almond-shaped Palæolithic implements from there, one each from the Schaapfontein-Dieplaagte and Elandsput pans, and one from Meerlandsvlei. They are made of a peculiar black aphanite, rounded pieces of which are not uncommon in the neighbourhood, and are much worn and deeply weathered, the facets being nearly obliterated and the outside much changed in colour. Their ancient appearance, viewed in the light of the data given in previous chapters, leads me to conclude that they are much older than the group about to be described.

On the side of the smallest of the five Damplaats pans I picked up the neat little implement represented by Figure 12. It is not unlike the typical Palæolithic implements in shape, but though worn, probably belongs to the newer group, as also does the even smaller and thinner, but equally worn, example from Langlaagte shown in Figure 11.

The implements of the newer group are a similar assemblage to that from the Junction of the Riet and Modder Rivers, and are mostly made of the same peculiar aphanite. They occur in great quantity on the sites of prehistoric settlements. These

settlements were all situated around springs, which in many cases no longer reach the surface. The implements are mostly scrapers, and, as one might expect from their occurrence, are as sharp as on the day they were made, though as a rule they have changed externally from their original black colour to various shades of grey.

Most of the sites are shown on the accompanying plan (Figure 6).

The Rietkuil site is perhaps the most interesting. There is a spring there which must have once been the centre of a large settlement. All around are extensive middens which are now hidden from sight by a covering of sand, but whose presence is plainly shown by the little mounds of debris turned up by burrowing animals. Judging from the numerous finds in the very limited amount of material accessible, they would well reward a systematic exploration. Every little heap of ash contains quite sharp and fresh flakes and cores, mixed with pieces of bone and fragments of ostrich egg-shells, while finely finished scrapers are not uncommon. Most of the flakes are slightly trimmed, the secondary chipping in many cases being, I think, the result of use; though in other instances due to the intentional removal of inconvenient projections along the edge. No one who has seen such a series can have any doubt as to the artificial character of the Eoliths. It is noteworthy that some of the flakes have been struck off older large weathered flakes. Small chert and jasper flakes were also found, as well as a few neat little scrapers of that material.

The peculiar wedge-shaped scrapers shown in Figure 13 are the dominant form at that site. Some are only half as long as these, though just as broad and thick.

I also obtained hammer and grindstones, a multiple-grooved cylindrical piece of sandstone, the half of a single-grooved tabular piece of aphanite, portion of a stone ring (armlet?), and flat pieces of the local phanerite polished on one side by use. Besides these I found the greater part of a bone pin, an ostrich egg-shell bead, and the incised fragment of ostrich egg-shell shown in the top left-hand corner of Figure 14. I also picked up a

piece of the shell of a large pelecypod (Unio?). Fragments of a plain hand-made pottery are abundant, while I obtained one decorated piece, the decoration—which is not complete—consisting of four rows of cord pattern.

It is interesting to observe that the farm cemetery is situated on part of the area covered by the middens, while the present-day rubbish heap is being piled up close by, both of which circumstances afford a much needed warning against always lumping together everything found on one site.

The Tweelingsfontein site is situated near a spring also. A shallow well had been sunk on this at some time or other, and the excavated clay and shale thrown up in a heap all round. In enlarging this well a cavity was met with in the made ground resting on the undisturbed clay (weathered shale) which occurred at a depth of 5 feet. In this cavity were found three ostrich egg-shells. Two of them were broken, but the remaining one, which I secured, was fairly intact, a small piece only having been knocked off by the point of a pick. The end was perforated to allow of its being used as a water-bottle, and the cuts round the opening have the appearance of being made with a stone flake. Immediately on hearing of the discovery, I visited the spot, but the ground round the cavity had been removed and the remains of the other egg-shells dispersed. There was a certain amount of ash among the excavated debris, as well as part of the skull and some broken bones of the ox. I also obtained a grindstone, the half of one of the well-known perforated stone balls, and a single-grooved tabular piece of aphanite like that from Rietkuil.

This spring is situated on the edge of a very large pan, not shown on the plan. Close by, the thin covering of silt in the bottom of the pan has been scraped up to form a dam wall. There, numerous flakes, cores, and finished scrapers have been exposed to view. Together with them I found a neat little lanceolate spear-head of typical Solutric form, worked on both sides.

On the south side of the west end of the pan by the Damplaats farm-house, where the bottom had been stripped of silt, I came across a fine series of the scrapers of this group.

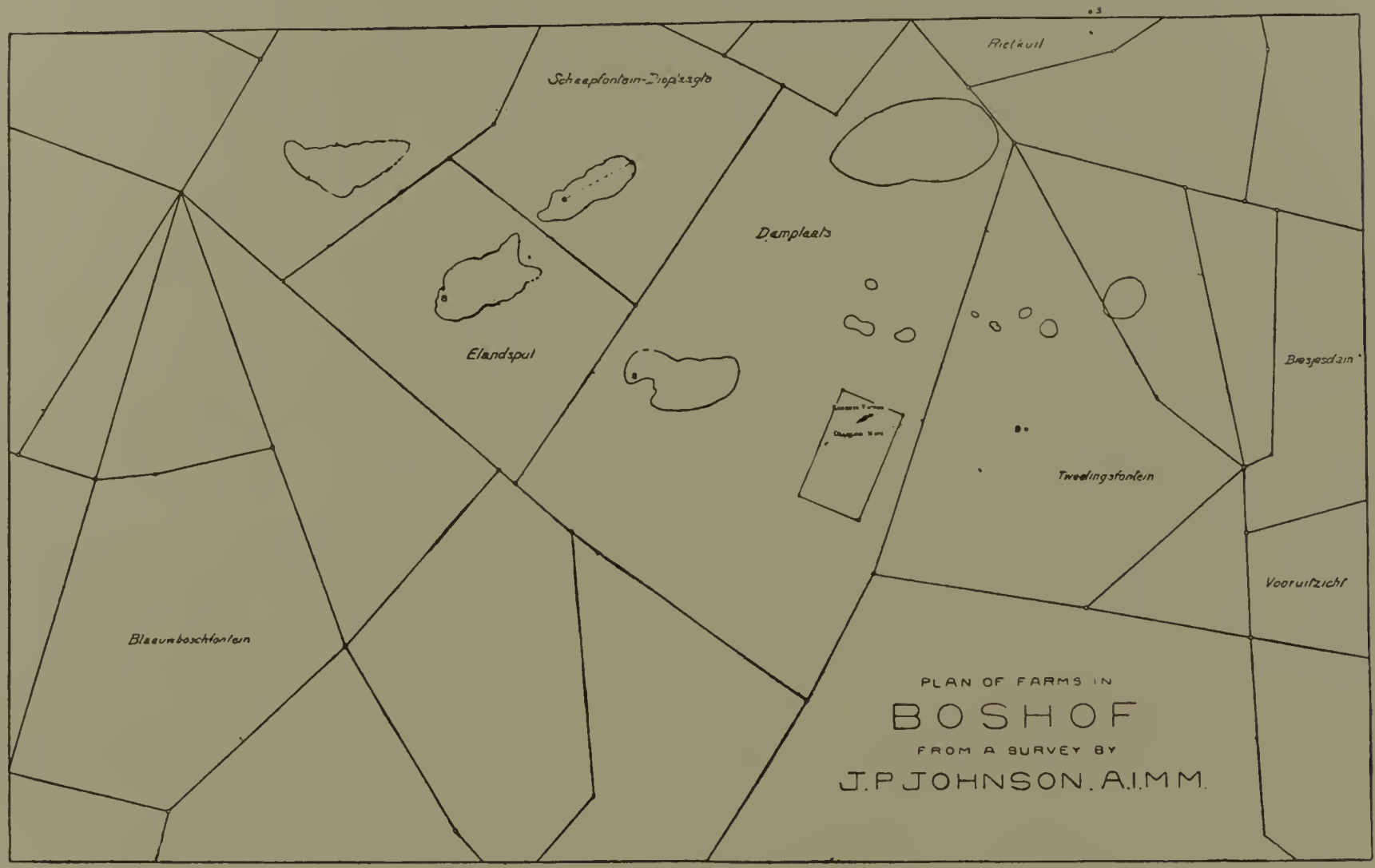


FIG. 6.—PLAN SHOWING SOLUTRIC SITES IN BOSHOF.
BASE-LINE IN SCHAAPFONTEIN-DIEPLAAGTE PAN = 1294·310 METRES.

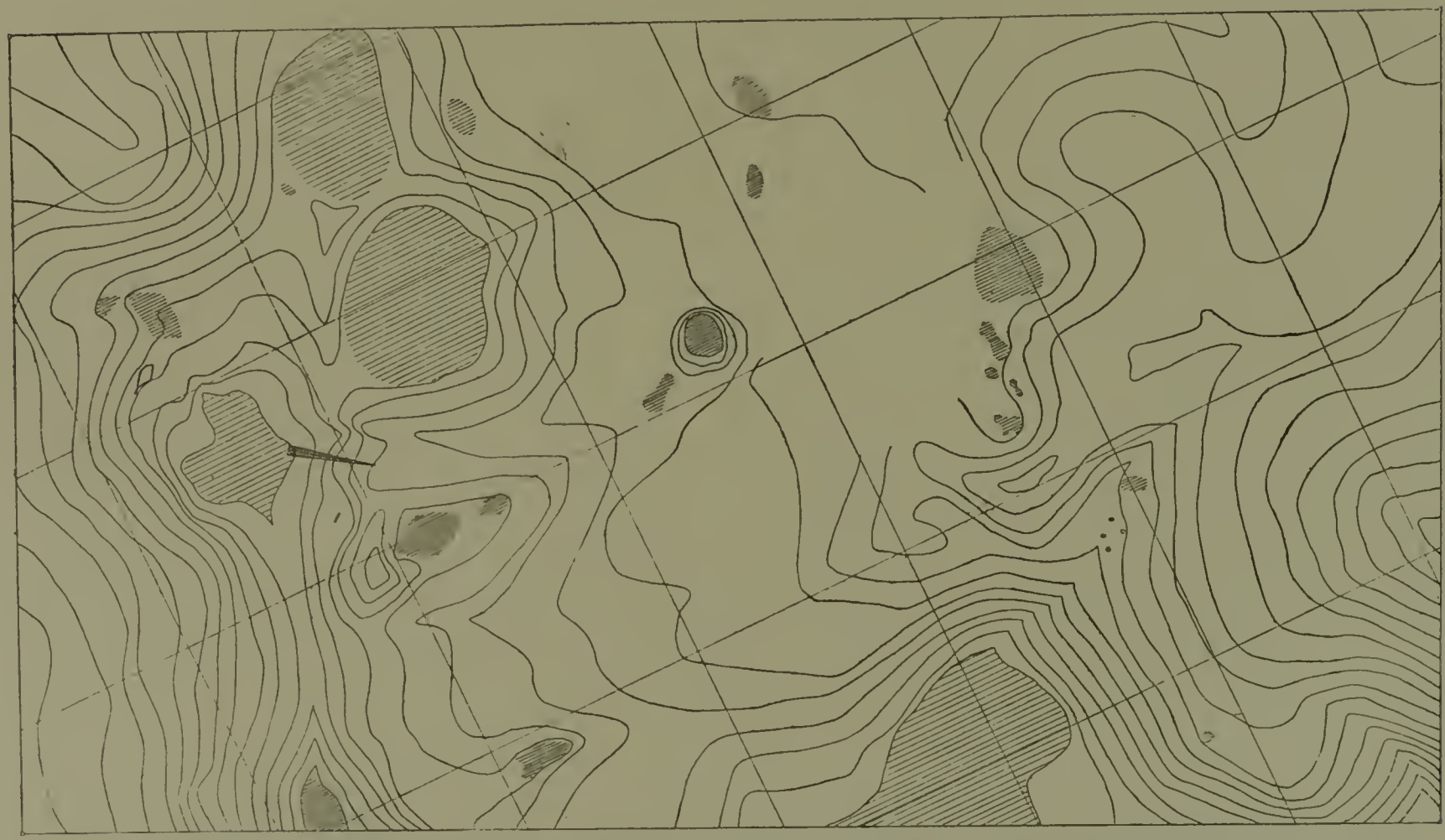
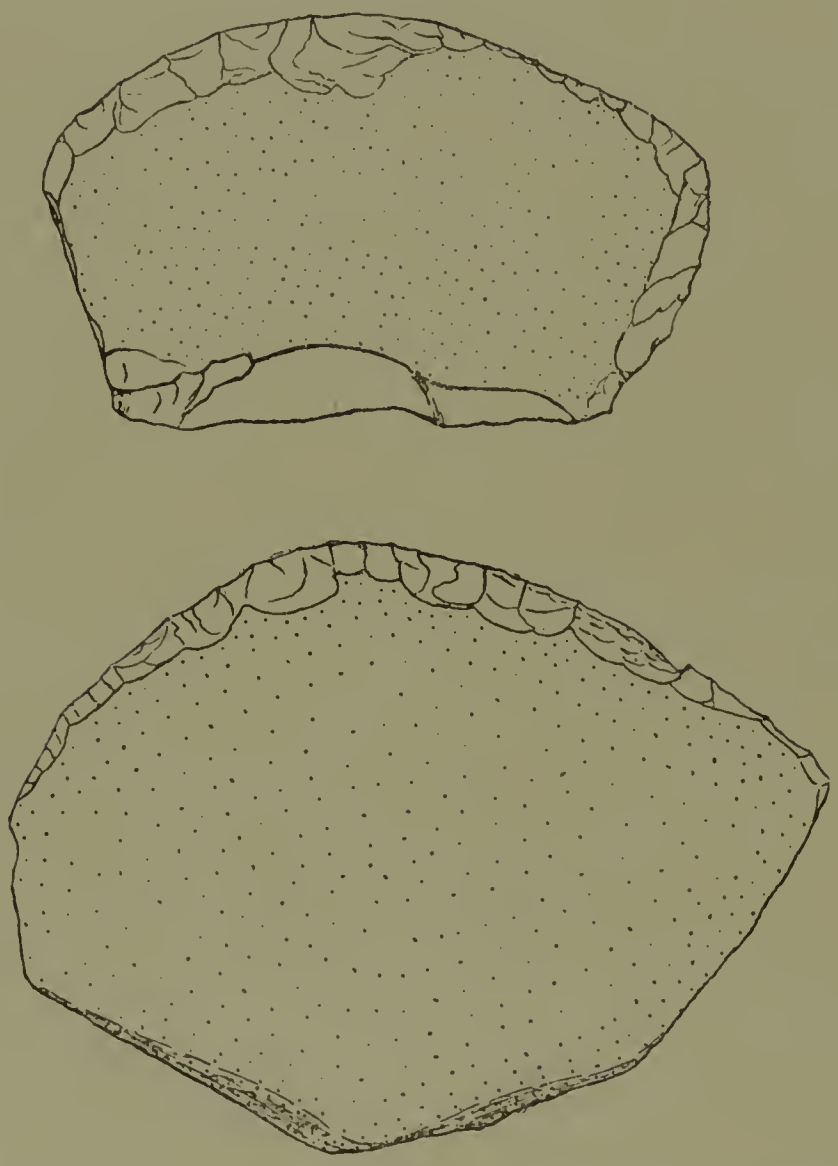


FIG. 7.—CONTOUR PLAN (BY THE AUTHOR) OF THE GROUND BELONGING TO THE ROBERTS-VICTOR MINE, ILLUSTRATING THE TOPOGRAPHY OF THE BOSHOF DISTRICT.

Some of them are really remarkable for their fine workmanship. There, the long T-shaped scrapers, of which some examples are shown in Figure 10, are dominant.

There must once have been a spring there, though there is no trace of one now.

A



B

FIG. 8.—(A) ELANDSPUT AND (B) SCHAAPFONTEIN-DIEPLAAGTE.

There is the debris of a settlement round the now dried-up spring on the edge of the Elandsput pan, from which I have obtained a number of implements and other relics. The thin

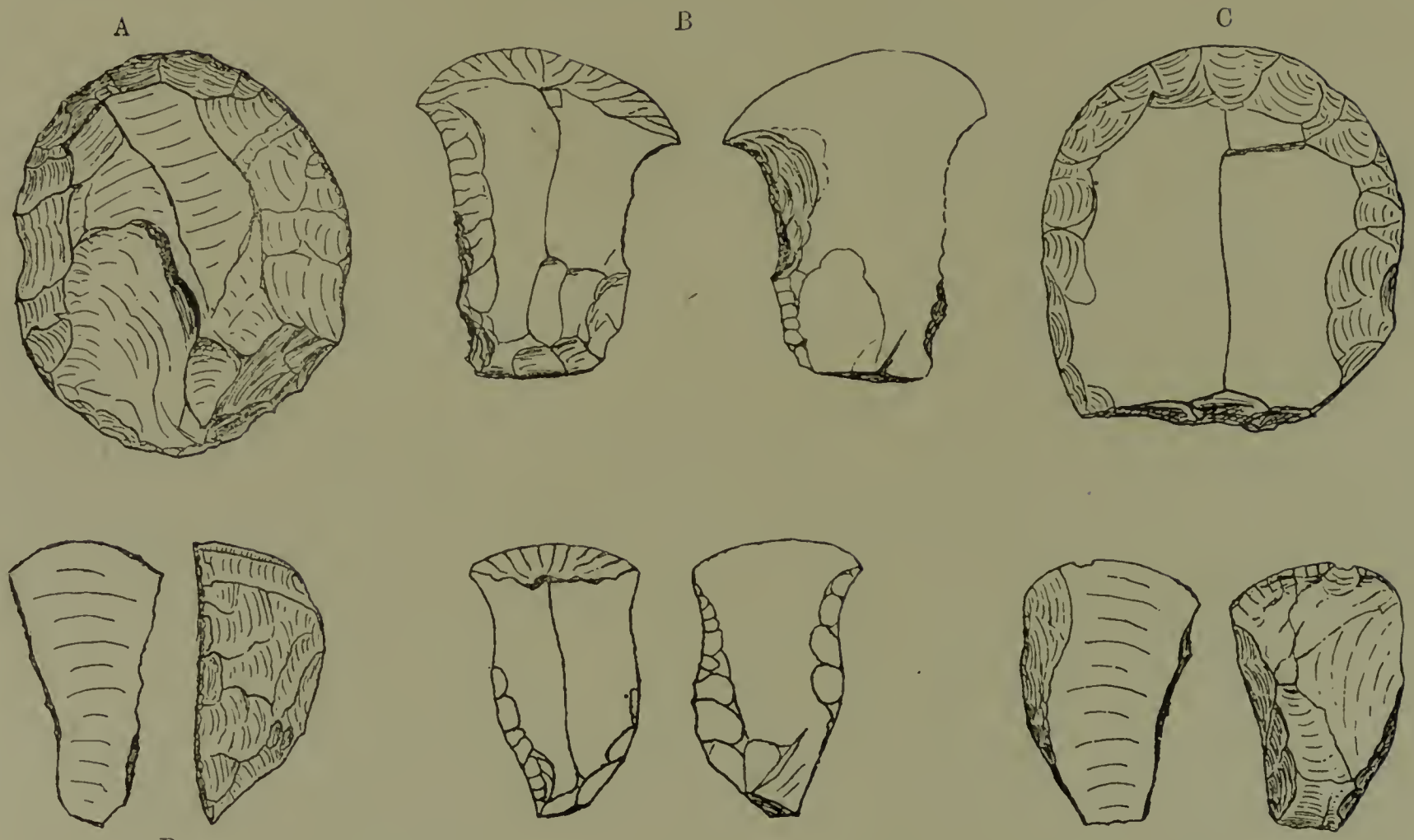


FIG. 9.—(A) TWEELINGSFONTEIN; (B) DAMPLAATS; (C) RIETPAN; (D AND F) RIETKUIL AND (E) DEVILLIERSRUST.

scrapers trimmed at the end only are there more conspicuous than at the other sites, but thick forms are still in the majority. One or two of the scrapers are remarkably minute.

FIG. 10.—RIETKUIL, TWEELINGSFONTEIN, AND DAMPLAATS.

In digging up one of the ash heaps, I came across a slab of the local phanerite in which a hollow had been ground, together with the actual grindstone which was used with it.

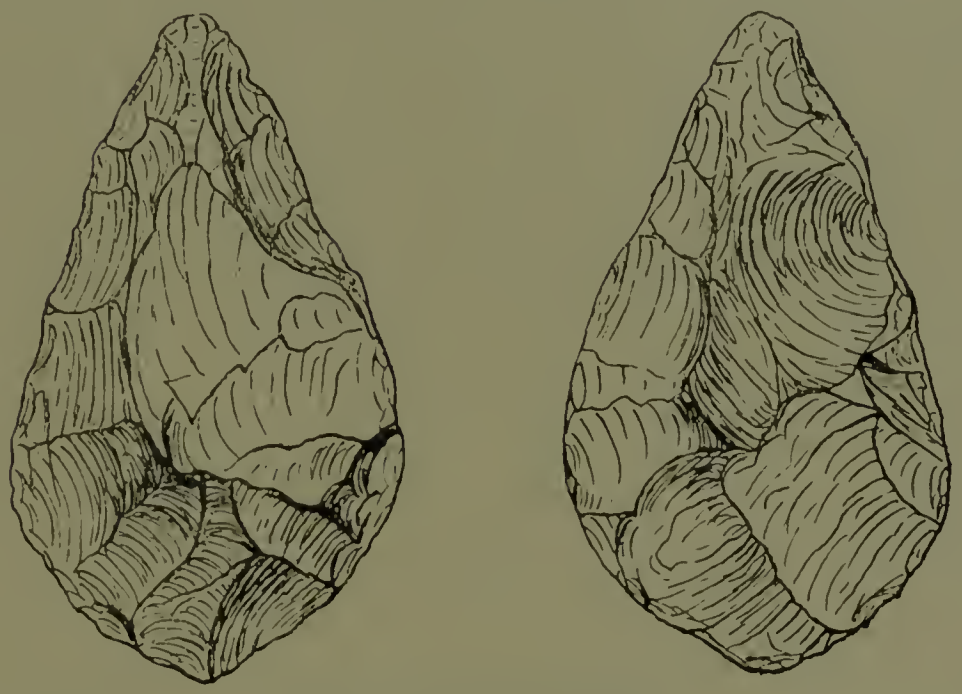


Fig. 11.—LANGLAAGTE.

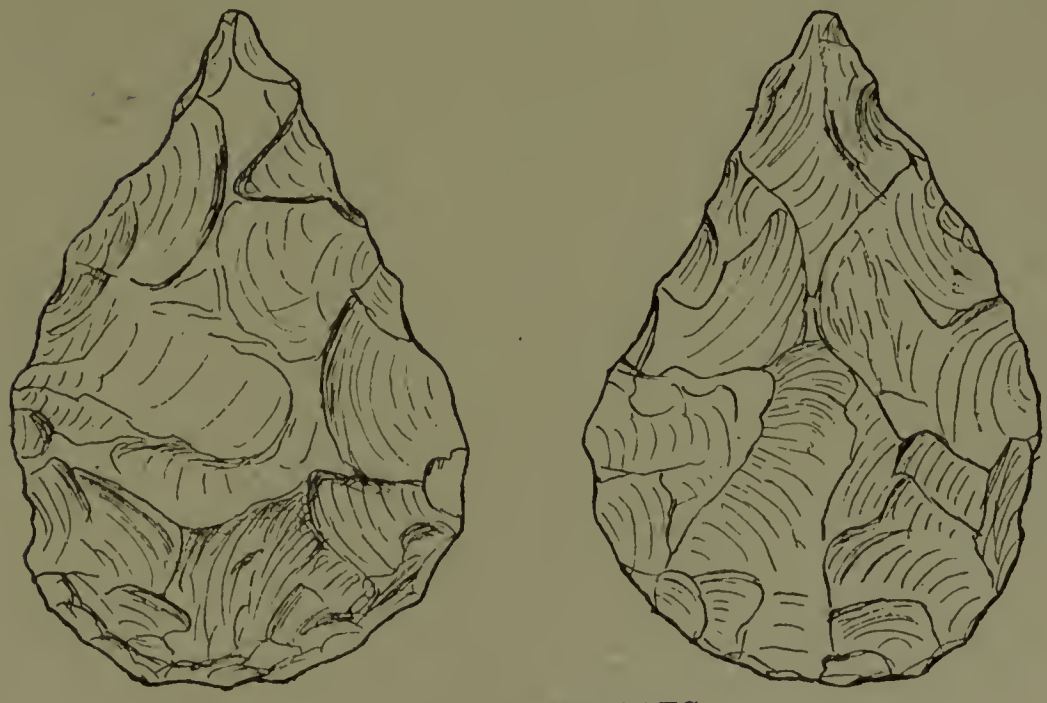


Fig. 12.—DAMPLAATS.

I have also one of the well-known perforated stone balls, which was picked up in the pan and given me by my friend Mr. Develing.

Still more interesting are a number of fragments of incised ostrich egg-shell—presumably the remains of water-bottles—from

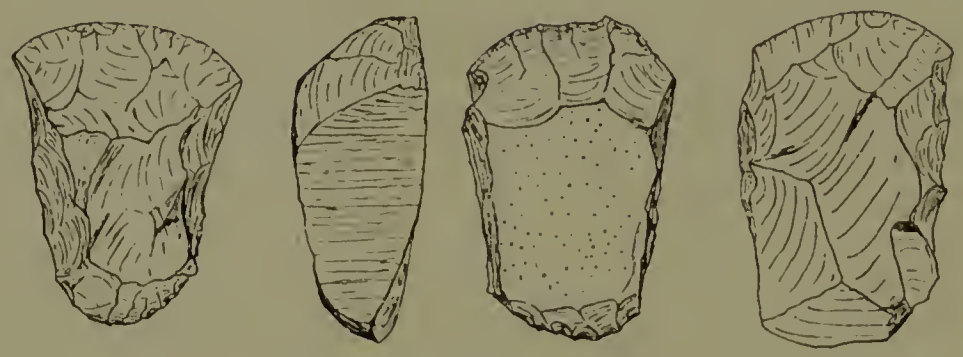


FIG. 13.—RIETKUIL.

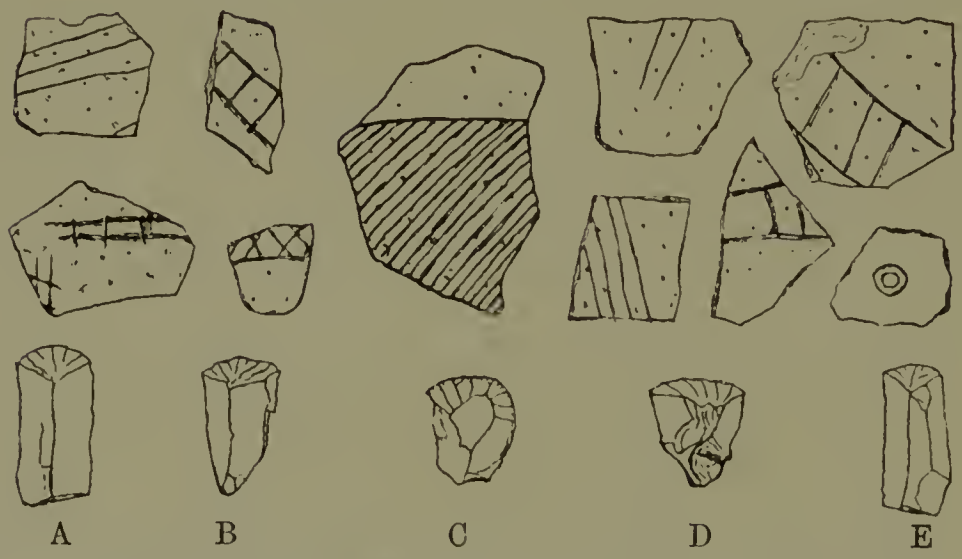


FIG. 14.—INCISED FRAGMENTS OF OSTRICH EGG-SHELL AND MINUTE SCRAPERS FROM ELANDSPUT (A AND B), RIETPAN (C), KALLEGAT (D), AND DEVILLIERSUST (E).

here. Some of these are shown in Figure 14. The specimen in the top left-hand corner is from Rietkuil, and the large middle specimen is from the Lange Berg, the rest being from Elandsput. The perforated piece of egg-shell—the initial stage in the manufacture of a bead—is from Elandsput also.

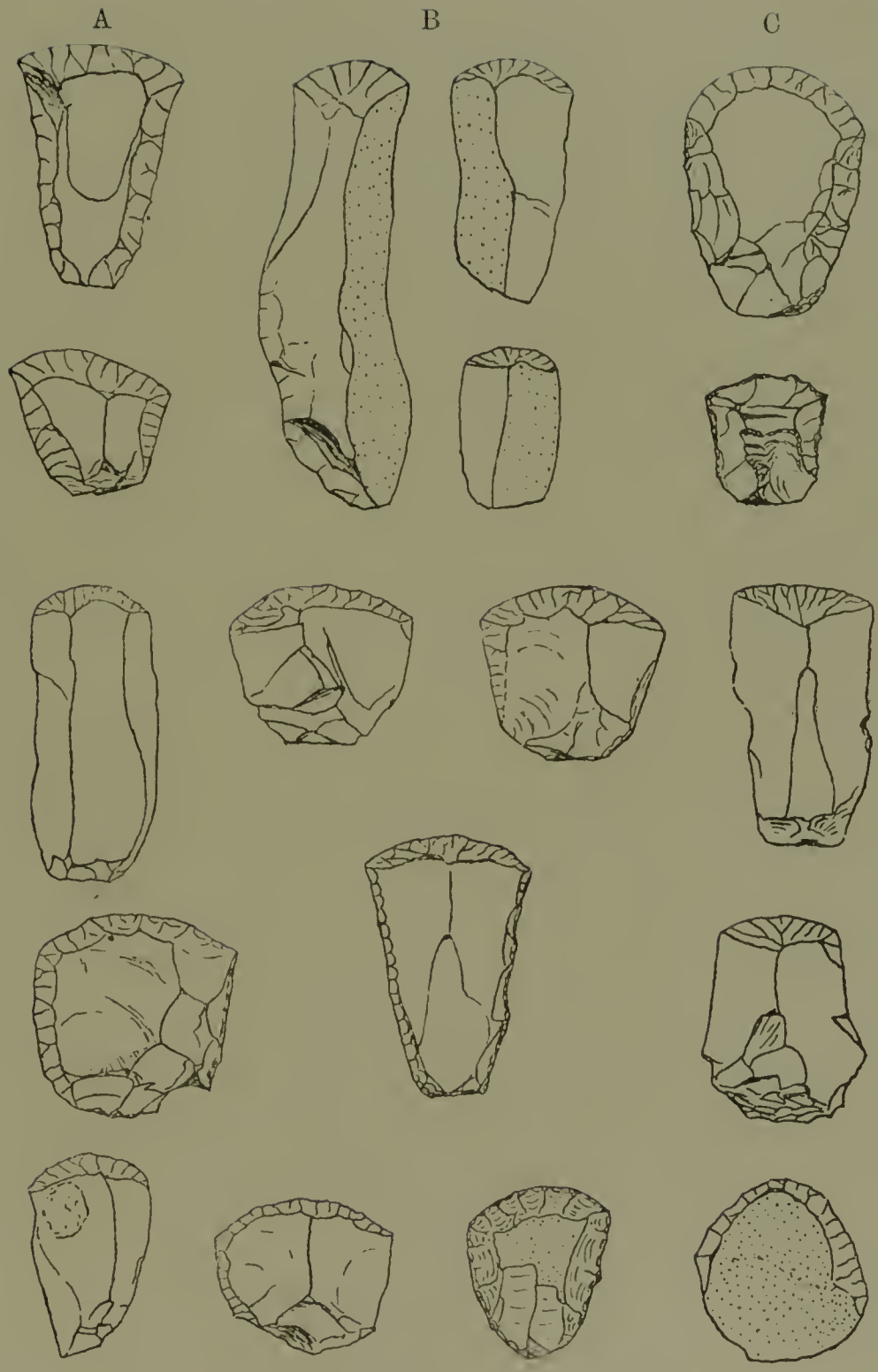


FIG. 15.—(A) RIETKUIL: (B) ELANDSPUT AND (C) DEVILLIERSRUST.

I also found a number of completed egg-shell beads, also portion of a cowrie shell. This last is noteworthy as it is a marine shell and must have been brought up from the coast.

I have two large perforated stone balls from Vooruitzicht and a small one from Meerlandsvlei, which were given me by my friend Mr. Jones. They well illustrate the diversity in size and weight of these curious objects. The largest specimen measures 10 centimetres along the perforation and weighs about 4½ lbs., while the smallest is only 4 centimetres in diameter, with a weight of about ¼ lb. The latter is not completed, the hole, which has been started from both sides, not being finished. There are traces of middens round the well on Vooruitzicht, and I obtained a characteristic scraper and some pieces of pottery there.

I have a few of the characteristic scrapers of this group from the farm Schaapfontein-Dieplaagte, and there are traces of middens in places on the west side of the pan. At the point marked thus (*) there is a prominent outcrop of the local fine-grained phanerite, in which several small hollows have been worn by grinding.

On Rietpan (No. 46) I obtained a large number of scrapers from beneath a thin layer of rainwash, situated by the edge of the pan not far from the homestead. There, thick scrapers still predominate, but thin forms are better represented than at the sites previously considered in this paper. A series of the latter is illustrated in Figure 16. As at the other sites, some are a good deal larger than the average, while others are much smaller, one (see Figure 14) measuring 12 by 9 millimetres; but neither extreme is common. The very long scrapers and those trimmed at both ends are well represented. I also obtained a very fine jasper example of the short variety of wedge-shaped scraper, as well as five small chert examples of more ordinary form. While a large proportion are most exquisitely finished, a great many have been very roughly made. These last are interesting on account of the light they throw on the Eolithic question. Many, indeed, show little or no improvement on their prototypes. I also found an ostrich egg-shell bead and a piece of pottery together with the implements.

The site on Devilliersrust is probably the most extensive and prolific of all that I have examined in this district. It is situated round an old spring on the edge of the pan and close by the homestead. The water no longer comes to the surface, but is reached by means of shallow wells.

The middens have been well turned over by the plough and large numbers of beautifully-finished scrapers exposed to view.

Fig. 16.—RIETPAN.

Thick specimens are rare, while the wedge and T-shaped forms are conspicuous by their absence. Some are truly minute, yet lose nothing in quality of finish on that account. Very small chert scrapers also occurred.

I also obtained a perforated stone which differs in many respects from those previously referred to. Whereas they are either spherical or spheroidal in shape, this one is discoidal. The

hole has been bored from both sides, and, instead of being of uniform size, gradually decreases in diameter till at the middle it has only half the diameter it possesses at the two ends. Further, the striæ in the hole are annular, not longitudinal, showing that the motion of the implement when in use was rotary instead of reciprocal.

Fragments of a plain hand-made pottery are abundant, and I also found the greater part of two bone pins (portions of arrows), a piece of ostrich egg-shell with a hole bored in it, five completed egg-shell beads, and a circular piece of ostrich egg-shell.

During a hasty visit to the farm Kalkgat, I obtained some characteristic scrapers from a spot on the edge of the pan by the homestead. They include an example of the wedge-shaped type. One scraper well illustrates the not very common feature of being notched on the sides to facilitate attachment to a handle. A few of the specimens are remarkably neat and small. Most important is a chert example of the crescent variety of "pigmy implements," a peculiar group that is more fully dealt with in a later chapter.

Cradock.

Professor Young has a number of scrapers like those from the junction of the Riet and Modder rivers and the Boshof division, which were sent to him by Mr. Cottell of Cradock.

They mostly come from a spot about two miles south of the village. They are a very representative series and exhibit most of the variations usually met with. They are also of the same peculiar aphanite.

* * * *

The group of implements considered in this chapter is an extremely interesting one, but, at the same time, a very difficult one to adequately describe and illustrate—so multitudinous are the varieties, so remarkable the identity of specimen after specimen from different localities, so similar the general assemblage and yet so distinct the local facies, that one requires to see all the specimens to appreciate them. They cannot be very ancient. The conditions under which they occur are final and conclusive on

that point; but they may have some antiquity. There is evidence of a considerable change in the meteorological conditions of the country since the makers of them lived there*; but such changes do not always require lengthy periods of time.

The question that most concerns us at present is their relation to the Palæolithic types. If these last have not the antiquity suggested in the previous chapter, then they must be contemporaneous with the group under discussion. Judging by analogy with Europe, we should expect the Palæoliths to be vastly older, and the absence of the Palæolithic types supports that view. The great abundance of these scrapers suggests that they were left behind during a hurried abandonment of the settlement at some great crisis in the affairs of the tribe. In that case, supposing the two to be contemporaneous, it is possible that, as has been suggested regarding their European equivalents, the Palæolithic types being mostly weapons, were at the time being employed elsewhere; but to this view is the objection that many of the Palæolithic types are obviously not weapons, and, therefore, ought to be found where such great quantities of other domestic tools occur.

It is rather curious that out of my collection of two hundred and ninety odd from the junction of the Riet and Modder Rivers, and of one thousand eight hundred (the larger number of which are finished specimens) from Boshof, there is not a single concave scraper.

* See paper by the author on "The Geology of the Neighbourhood of the Roberts-Victor Diamond Mine," Trans. Geol. Soc. S. Africa, Vol. IX (1906).

CHAPTER VIII.

TRANSITION (SOLUTRIC) GROUPS.—*Continued.*

Taaibosch Spruit.

The Taaibosch Spruit is a tributary of the Vaal, and flows into that river south-west of Vereeniging. Mrs. Hutt had previously obtained Palæolithic implements there, and drew my attention to the fact.

As in the case of all the large spruits in this part of South Africa, this one is bordered by a varying thickness of fine alluvium, at the base of which is a stratum of coarse gravelly detritus (= lower terrace of the Vaal).

The more important finds comprise a group of implements of Palæolithic type from beneath, and a group of implements of a Solutric type from above, the alluvium.

From the bed at the base of the alluvium I have obtained, in addition to a quantity of the characteristic large flakes, a number of the typical Palæolithic implements. They are fashioned out of a green aphanite, and are all water-worn, some being reduced to the condition of a pebble. One of the specimens is as much as 22 centimetres in length, whilst another is only 9. They present no special features as regards workmanship. They include specimens of the group of large flakes worked on one side and edge only. No examples of the axe-head type were obtained. I also found a neat example of a concave scraper (Figure 5, C).

In places on the top of the overlying alluvium I came across quantities of very small flakes of chert, jasper, and agate, and here and there among them examples which had been trimmed into minute scrapers. Some of them are shown in Figure 17. It is difficult to imagine exactly what could have come within

the scope of these remarkably small tools. The fineness of the secondary trimming is really wonderful. My friend, Mr. Leslie, has a number of these minute scrapers from around Vereeniging itself.

Wolmaransstad.

On the farm Blinkklip (portion of Driefontein), near this village, there are some very interesting aboriginal chippings. They are situated on some boulder-like outcrops of aphanite and

Fig. 17.—(A) TAAIBOSCH SPRUIT; (B) WITWATERS RAND.

depict various wild animals, such as the eland, giraffe, rhinoceros, and ostrich. At this spot, in places where the surface soil had been partially washed away by the rain, I found numbers of very small chert and agate flakes, and three minute scrapers similar to those from Taaibosch Spruit.

Witwaters Rand.

The implements from the farms Elandsfontein and Vlakfontein, and the conditions under which they occur, are so similar that they may be conveniently described together.

The majority of these implements are minute scrapers similar to those from Taaibosch Spruit. They are, however, manufactured from different materials. Most of them are of white quartz, and bear eloquent testimony to the skill of the makers, for it is one of the most refractory stones for the purpose. Many are of chert, and some of a green aphanite. A series of these are shown in Figure 17. It will be noticed that although in every case the bevelled edge has been so carefully and symmetrically worked, no attempt has been made to trim the reverse end to any definite shape; from which we may infer that they were either bound or cemented to a handle. Larger and smaller specimens occur, as well as concave scrapers.

Associated with the scrapers are quantities of green aphanite flakes of more ordinary size; and from both localities I have specimens of the cores from which they were struck. I think they were made purely for use as flake-tools.

At both places the implements were found on the surface among low kopjes bordering spruits.

The implements from the farm Waterval are a similar assemblage to the above. They are made of the same materials, and are associated with similar green aphanite flakes. Together with them I found numerous and mostly quite sharp flakes of quartzite, together with two rough discs of the same material. I have also in my collection a portion of a perforated stone found by my friend Mr. Hewitt on Signal Hill. It appears to have been of the discoidal type.

Barberton.

There is an interesting aboriginal painting, depicting men shooting at an antelope, in a hollow in a rock on the outskirts of this village. In the surface soil around this spot are numerous characteristic small chert flakes of the Taaibosch Spruit kind and the typical minute scrapers undoubtedly occur there—though I did not succeed in finding any.

I have in my collection two perforated stone balls from the neighbourhood which were given to me by Mr. Hulley. They are spherical and spheroidal in form, and weigh twelve and a half and nine and one-eighth lbs. respectively.

Carolina.

In a ravine situated on either the farm Doornkloof or on Kleinbuffelspruit, near Carolina, there is a rockshelter containing a number of aboriginal paintings, including a very interesting figure of a man dressed up as a bird.

Immediately opposite is another, but smaller, shelter in which there are no paintings. In front of this I obtained several minute quartz, chert and aphanite scrapers of the Taaibosch Spruit type. They were found at a spot where the rain had washed away the surface soil.

Bulawayo.

South-east of Bulawayo are some kopjes, where I came across quantities of very small flakes of coloured chert, some of which were trimmed into minute scrapers like those from Taaibosch Spruit and the Witwaters Rand, also irregularly-shaped chips with similar delicate trimming. But even more interesting is a very fine, and therefore unmistakable, example of the crescent type of "pigmy implements"—a peculiar group that is better represented at a locality which will be described in the next chapter.

* * * *

The truly remarkable group of implements introduced in this chapter is of the greatest interest. Its stratigraphical relation to the Palæolithic types seems to be beyond doubt, while the delicacy of finish is not what one would expect to find in association with Palæoliths. Indeed, the scrapers show a refinement of manufacture which is not surpassed, if equalled, in any other part of the world. It may be argued that the layer of alluvium which separates the two at the Taaibosch Spruit does not correspond to any considerable lapse of time; but such time is surely required for the apparent elimination of the earlier types. The discussion of the relation of this group to that described in the immediately preceding pages will be best postponed to a later chapter.

CHAPTER IX.

TRANSITION (SOLUTRIC) GROUPS.—*Continued.*

Prieska.

I have already described the cemented river gravel containing Palæolithic types at Prieska. Among sand-dunes overlying this same terrace I obtained conclusive evidence of the presence of the Taaibosch Spruit group in the shape of a characteristically small jasper core, coloured chert flake, and grey chert scraper. I also found a hemispherical stone like that from the Junction of the Riet and Modder Rivers, but with the hole barely started.

Riverton.

Riverton Island is famous for the outlines of animals and the curious symbols which are chipped on the polished rock-surfaces. The great eland mentioned by Stow is still in existence, though sadly damaged.

I have already mentioned the discovery of implements of Palæolithic type in the river deposits there.

Above the alluvium and gravel is a thin covering of constantly shifting sand. In places where this had been blown away I came across, in great abundance, a most interesting group of implements. Apart from hammer and grind-stones, a perforated stone ball, and grooved cylindrical pieces of sandstone, they may be divided into three series: (1) Scrapers of grey and green aphanite, resembling in a general way those from the Junction of the Riet and Modder Rivers; (2) Minute chert scrapers like those from the Taaibosch Spruit; and, (3) Pigmy chert implements of remarkably delicate workmanship, mostly of peculiar form and unknown use.

A series of these last are shown in the accompanying illustration (Fig. 19). They are a group that is already known from such distant corners of Eurasia as Britain and India. They

comprise six distinct types, including the highly characteristic crescent, besides little borers that may very well have been employed in the manufacture of the ostrich egg-shell beads. The smallest crescent measures only 9 millimetres in length.

Among the Riet and Modder group the short variety of the wedge-shaped scraper is well represented. Many of the scrapers

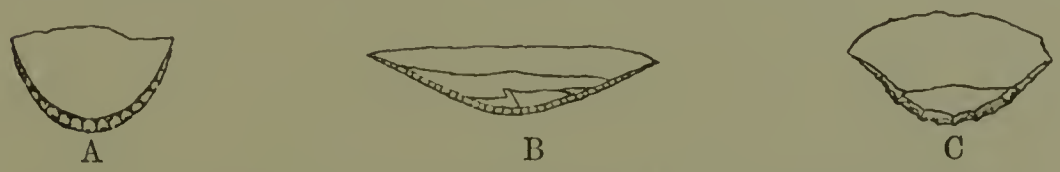


Fig. 18.—(A) RIVERTON; (B) BULAWAYO; (C) MOUTH OF HART RIVER.

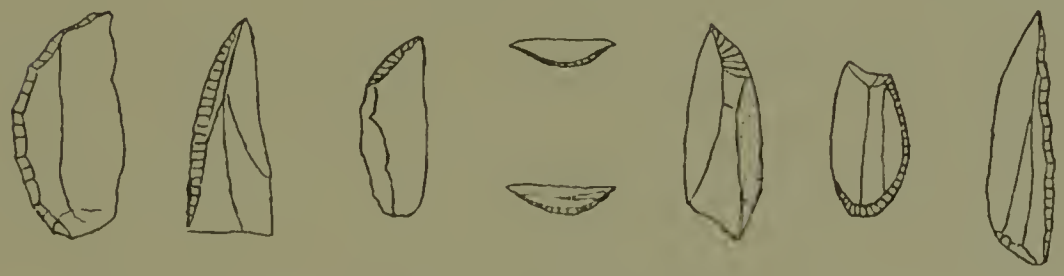


Fig. 19.—RIVERTON.

Fig. 20.—OSTRICH EGG-SHELL BEADS, and TOOLS USED IN THEIR MANUFACTURE.

of the Taaibosch Spruit group are much smaller than those from the type locality, though beautifully finished. Equally small circular scrapers made from the half of a pebble occurred in great quantity.

Besides these, I obtained fragments of pottery, and a number of ostrich egg-shell beads, as well as spherical and cylindrical glass beads. These last, though much discoloured by long exposure to the weather, probably have no connection with the implements, there being all sorts of other modern *débris* associated with them in places. At the present time there are a number of Bantu living in huts on part of the old site.

An idea of the extent of the industry which once flourished on this site may be gathered from the statement that, from the comparatively small area then exposed to sight, I obtained over thirteen hundred flakes, cores, unfinished and rejected implements, as well as seven hundred beautifully finished scrapers.

Mouth of Hart River.

I have already alluded to the limestone cliff just west of the mouth of the Hart River. On top of this cliff, and some little distance back from the river, I obtained a large number of minute scrapers, mostly of coloured chert, similar to those from Taaibosch Spruit, some very nice "pigmies" like those from Riverton, several ostrich egg-shell beads, a circular stone with flat sides and edge, a cylindrical glass bead, and some pieces of pottery. Especially interesting is the very neat little borer of jasper shown in Fig. 20. It will be noticed that the trimming of the one side is in the reverse direction to that of the other, so that when revolved both edges come into play as in the modern engineer's bit.

Blauwbank, Hay.

On the farm Blauwbank (O. 376 D), which is situated on the banks of the Orange River, I obtained a nice series of minute chert scrapers like those from Taaibosch Spruit, as well as some neat "pigmies," among sand-dunes. Two of these last (Fig. 20), of recognisable Riverton types, are remarkable for their size and extreme thickness. Together with them I found fragments of pottery, two small glass beads, and numerous ostrich egg-shell beads. These last occurred in every stage of manufacture: from a piece of shell with the hole just started, to the finished article.

A series of them, illustrating the process of making, is shown in Fig. 20. One of them has been broken before completion.

Lymputs, Hay.

On the farm Lymputs I obtained a number of minute jasper scrapers of the Taaibosch Spruit type, associated with flakes of green aphanite, among low kopjes bordering a spruit.

* * * *

The discoveries described in this chapter considerably extend our knowledge of the Taaibosch Spruit group, and further stratigraphical evidence that they are much more recent than the Palæolithic types is brought forward. Particularly valuable in this connection is the Prieska data.

The "pigmies," as they have been not inappropriately termed by Gatty, who first discovered them in Britain, are specially noteworthy. Regarded as a whole, their identity with the European and Indian groups is unmistakable; though, if one may judge from descriptions, they differ much in individual form, only one—the crescent—being common to both. They do not, of course, constitute an assemblage in themselves. They were made by the same people who made the Taaibosch Spruit type of scraper found with them. They may, however, be characteristic of an advanced stage of that culture.

CHAPTER X.

TRANSITION (SOLUTRIC) GROUPS FROM ROCK-SHELTERS IN THE ASBESTOS HILLS.

The structure and constitution of the Asbestos Hills are very favourable to the formation of rock-shelters. They probably occur throughout the whole range, and all of them were no doubt inhabited at one time or another. Those examined by me are widely separated, one series being situated on the farm Kranzfontein and the other near Griquatown. At both places quite sharp and fresh spalls of the local jasper were abundant in all the rock-shelters investigated; while a careful search brought to light a number of minute flake-tools, fragments of pottery, and ostrich egg-shell beads.

On the farm Kranzfontein the rock-shelters occurred in the precipitous sides of a winding kloof. I examined two of them. Some of the objects obtained are shown in Fig. 21. Those in the two left-hand rows are from one rock-shelter, the rest are from the other. They are mostly scrapers made chiefly of the local jasper, but also of grey and coloured cherts and agate. The remarkably small core, from which correspondingly minute long narrow flakes have been struck, is a particularly eloquent testimony to the skill of the makers of these stone implements. Very interesting, too, is the sea-shell (of which two views are given), the incised ostrich egg-shell fragment, and the ostrich egg-shell bead. I also obtained a couple of facetted grinding stones—one from each shelter.

From among debris on a hill close by I also obtained a typical Palæolithic implement of jasper. It has rather an old appearance, and does not suggest any connection with the rock-shelter implements.

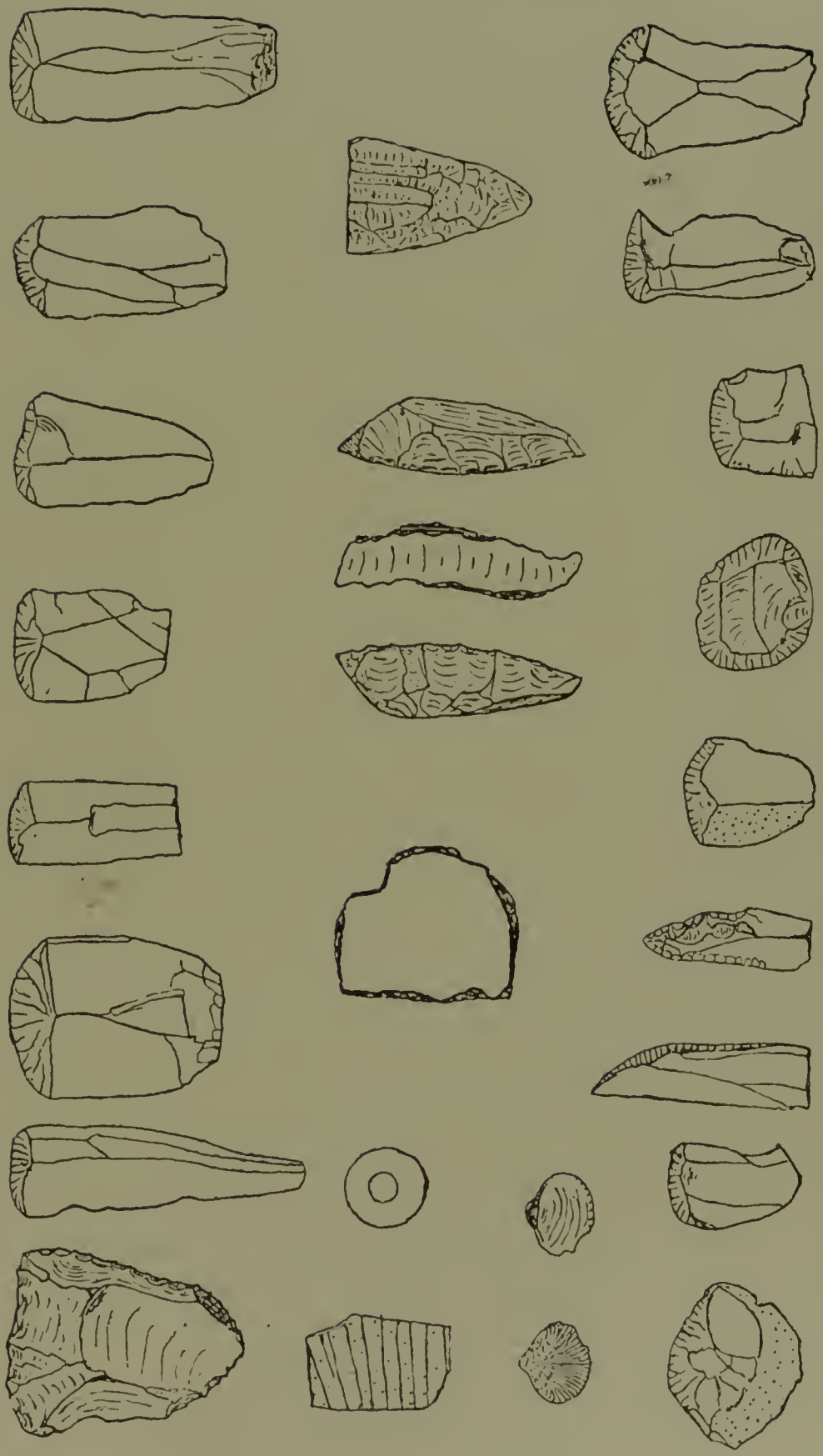


FIG. 21.—KRANZFONTEIN ROCK-SHELTERS.

The kloofs at Griquatown are full of rock-shelters. Stow mentions aboriginal paintings in one of them, but there were none in those I examined. I obtained quite a nice series of flake-tools of jasper and chert in them. Twenty-two examples are shown in Fig. 22. Some of them are very fine instances of work in stone, but the drawings, unfortunately, do them scant justice. I also obtained a piece of ostrich egg-shell incised with a pattern like that (Fig. 14) from the Lange Berg.

Though there is a difference in detail between the groups figured from Kranzfontein and those from Griquatown, the general facies is unmistakably the same. The assemblage is very similar to, though by no means identical with, that of Riverton. The very long scrapers and those trimmed at both ends are represented, as also are the "pigmies," by some very neat specimens.

There must be a wealth of interesting material hidden away in these rock-shelters. The specimens I obtained are the result of a hurried examination during a two or three hours' outspan, and can be but a tithe of what would reward a systematic exploration.

* * * *

We are now in a position to discuss the question of the relationship of the Riet and Modder group to the Taaibosch Spruit group. At Riverton both occurred in abundance, and from the evidence of that site alone we would undoubtedly have considered them to be the work of one and the same people. But the distinctness of the two groups elsewhere made one hesitate. The danger of lumping together everything found on one site had been very forcibly impressed on us. The assemblage met with in the rock-shelters of the Asbestos Hills, however, shows them to be contemporaneous, and manufactured by the same race. At first the marked difference elsewhere of the two groups perplexes us; but an examination of the neighbourhood of the various discoveries from a geological point of view reveals the reason. At some localities the only available material was the aphanite, at others the chert. Now, the aphanite occurs in moderately large pieces, and permits of the manufacture of large

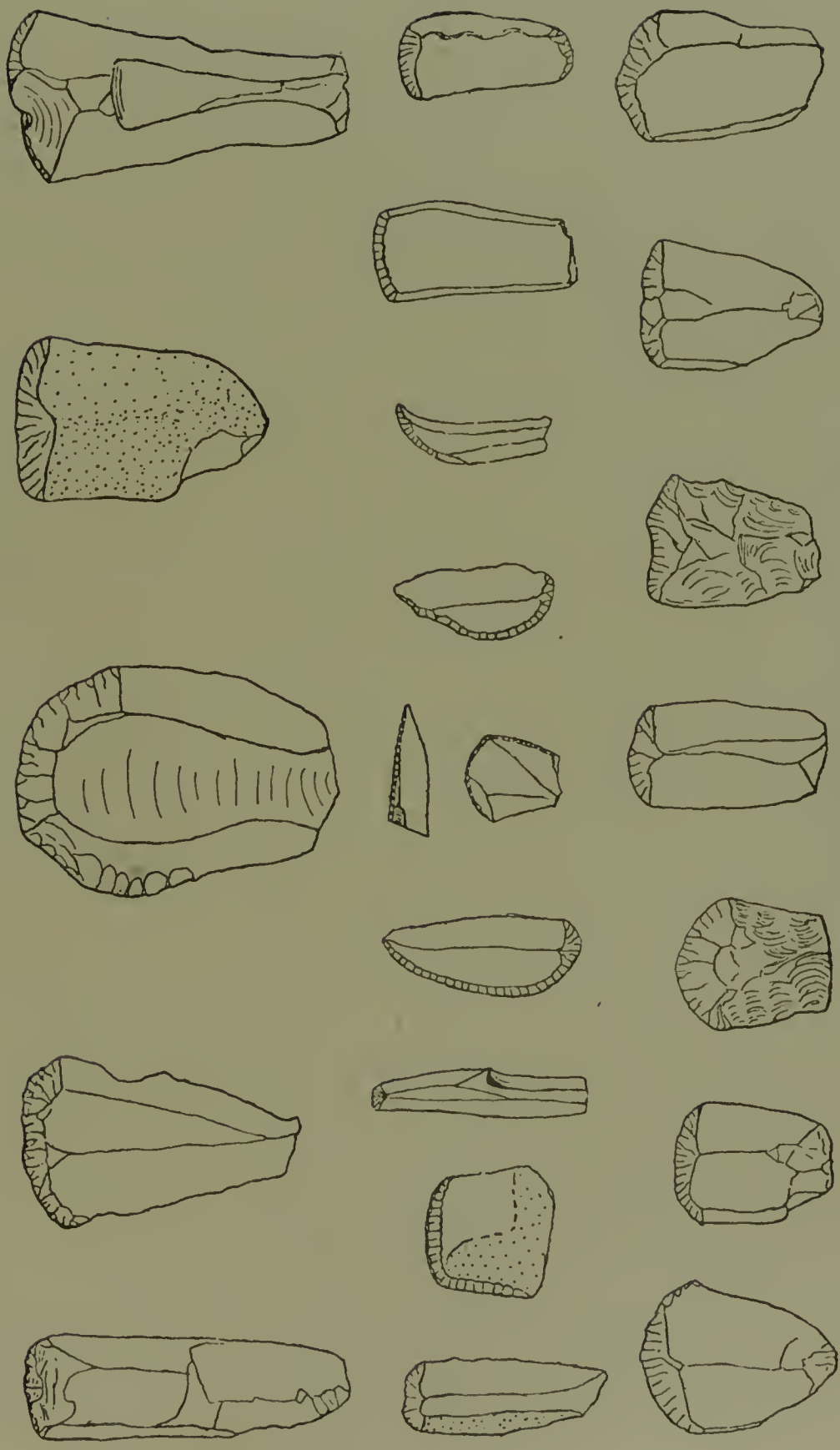


FIG. 22.—GRIQUATOWN ROCK-SHELTERS.

scrapers, while at the same time affording scope for the wide range of variation exhibited. The chert, on the other hand, is only accessible as small pebbles, and therefore small scrapers were the rule, and variation was correspondingly restricted. The few chert scrapers found with the Riet and Modder groups are all small and of the Taaibosch Spruit type. At Riverton both materials were available.

CHAPTER XI.

MISCELLANEOUS.

Sanddrift.

On the farm Sanddrift, in the division of Hay, there is a great basin-like hollow encircled by cliffs. A small spruit has its birth in this hollow, and flows away southwards through a picturesque ravine. The cliff section shows boulder-shale, overlaid by a bed of comparatively recent formation, consisting of small boulders and stones in a matrix of rubbly limestone.

On a rise a little to the east of this hollow is much jasper gravel like that of Leijfontein, containing similarly worn and highly-glazed jasper Eoliths and Flake-Eoliths.

Immediately west of this same hollow I found many typical Palæoliths, in different stages of wear and of various materials. All of them had acquired a more or less incipient glaze.

In the eastern side of the hollow is a cave; it has been excavated—artificially, for the most part at least—in the cliff of stony rubble, and is approachable by means of a large talus which there lies at the foot. In it I obtained many quite sharp and fresh-looking spalls, as well as a small series of implements like those from the Asbestos Hills. They are shown in Fig. 26. Very interesting is the truly minute core, which is actually a little smaller than shown. The scrapers exhibit the high standard of workmanship characteristic of this group, though I am afraid the illustrations do not give that impression. Among them will be noticed an example of the short variety of wedge-shaped scraper. Those from inside the cave are as fresh-looking as on the day they were made, but some picked up just outside the entrance have become glossy, and even slightly glazed. Together with them I found a piece of pottery, a bone tool, a number

of cut and perforated fragments of ostrich egg-shell, and one completed bead of same. These are also shown in Fig. 26. I further obtained a fish vertebra, portion of a tortoise's shell, and many pieces of mammalian bone.

Though so close to one another, there is no reason for supposing the three groups to be contemporaneous.

Modderpoort and Ladybrand.

At Modderpoort, in the cliffs at the back of the Mission Station, there are three rock-shelters which I examined under the guidance of the Rev. M. Norton. They contain a number of aboriginal paintings. One fresco, which I copied, and which is reproduced in Fig. 25, is specially interesting because it shews work of three different ages. I obtained a large number of minute chert and agate scrapers of the Taaibosch Spruit type in these shelters as well as a bone pin (portion of arrow) like those from Devilliersrust.

On the south side of the kopjes on the farm Omega, there are rock-shelters with paintings, while on the north side is a cave on the front of which are more paintings. Both series are now unfortunately very indistinct. I obtained some small chert and agate flakes as well as one or two minute scrapers of the Taaibosch Spruit type from both the shelters and the cave.

The village of Ladybrand is almost completely encircled by cliffs in which rock-shelters occur at intervals. I examined some of these under the guidance of Mr. Caplin. Most of them contain aboriginal paintings and all yield small chert and agate flakes, while here and there a minute scraper of the Taaibosch Spruit type is to be found in them.

All the shelters have been subsequently occupied by Bantu, who have built in front of them characteristic low semi-circular walls of uncemented stones, and close by, circular cattle pens of similar construction. Portions of clay dolls, fragments of pottery with a red gloss, glass beads, and crude drawings made in emulation of their artistic predecessors, also bear witness to the nationality of these later occupants, while in some cases the remains of their mud-walled huts are still preserved.

FIG. 24.—PICTOGRAPH. LADYBRAND. *(One-half scale.)*

FIG. 25.—PORTION OF FRESCO SHEWING WORK OF THREE DIFFERENT AGES. MODDERPOORT. *(One-sixth scale.)*

Fig. 26.—SANDDRIFT CAVE.

FIG. 27.—PICTOGRAPH. After Stow. In collection of Prof. Young. (*One-quarter scale.*)

Most of the aboriginal paintings are now indistinct, having suffered severely from the attacks of the atmosphere; many have become mutilated and scrawled over by both Bantu and European; while others have become completely obliterated by the smoke of fires. One large shelter due west of the village is a painful sight on account of the extent to which it has suffered at the hands of these vandals. Judging from the shadowy forms still traceable here and there, it must once have been covered with representations of hunting scenes and dances. One only of the numerous interesting pictographs (Fig. 24), which once adorned this shelter has, mainly on account of its being out of reach of the casual visitor, almost retained its original brightness.

The paintings are mostly in one colour, sometimes black but more often red. Some of the animals, especially the eland, which seems to have been a favourite subject, however, are in two or more colours. While the human figures are as a rule grotesque, those of animals usually show real artistic merit.

Steynsdorp Valley.

The slopes and upper end of the Steynsdorp Valley are clothed with a talus consisting of large subangular pieces of the different local rocks embedded in a reddish-brown loam. In the centre of the valley this loam has been removed, and the concentrated stones have been rolled and worn by a former stream. This gravelly detritus is now buried under a later accumulation of loam. The present stream has cut its way down through the loam, and, in places, through the underlying detritus also.

Palæolithic tongue and almond-shaped implements and axe-heads occur both in the talus and in the old stream deposit. In the former they are often quite sharp and fresh-looking, but in the latter they are always waterworn. The conditions under which these last occur unquestionably indicate some antiquity for them.

The talus on the higher portions of the slopes is being slowly but surely washed to a lower level by the rain, so that here and there a Palæolithic implement is exposed to view, looking as though it had been dropped on the present surface.

Fig. 28.—PICTOGRAPH. After Stow. In collection of Prof. Young. (*One-quarter scale.*)

The whole of the present surface is strewn with chert flakes, among which I obtained a fine scraper of a form (See Fig. 10, top row) that is very characteristic of the Riet and Modder group. They must be much newer than the Palæolithic types.

Stone implements occur under similar conditions in the Embabaan Valley. Palæolithic types were recorded* from there

* Rupert Jones, "Journ. Ant. Inst." XXVIII., p. 48—54 (1898).

in 1898 by Professor Rupert Jones, who described thirteen examples found by Mr. Ryan. His account is illustrated by a drawing to actual size of one of the specimens. I also have a number of typical Palæoliths from the Embabaan valley. They were given to me by my friend Mr. Nash, who received them from Ryan. Together with them were a number of chert flakes trimmed to a point and suggestive of a more advanced stage of culture. Most of these are trimmed on one side only, but two or three of them have been worked on both, including the really beautiful specimen shown in Fig. 31. The resemblance of this last to certain of the well-known Solutric types of Europe is unmistakeable, and there can be little doubt, I think, that it is of more recent date than the associated Acheulic types.

To return to the Steynsdorp valley. I have a perforated spheroidal stone ball which was given me by my friend Mr. Atkin, who found it associated (accidentally?) with a Bantu interment. A fine unglazed urn, with incised geometric decoration, the bottom of which had been knocked out, was also found with the skeleton.

The valley is dotted from end to end with groups of Bantu ruins. They comprise the usual small circular cattle pens and the comparatively large hut enclosures,* consisting of low walls of uncemented stones.

In and around these ruins large pebbles, worn down on both sides to a flat disc by rubbing, abound, as also do the polished slabs of granite with which they were used, and the pounding stones and hollowed out blocks of hard rock which served the purpose of pestles and mortars.

* Stone enclosures do not seem to be used so much nowadays. The wall encircling the family group of huts is usually made of a kind of stout matting. Here and there, however, the old style is retained. For instance, in the chief's kraal at Masibi's location near Potgietersrust, there is a fine example which, though built of round boulders, is so neatly constructed, that, from the outside, it reminds one forcibly of the famous Rhodesian enclosures. Really, there is of course a big, but not fundamental, difference between the two. I came across an interesting connecting link in 1907 at the extreme north-eastern end of the Murchison Range. It is a little ruin, oval in plan, measuring about 25 by 15 feet, perched on the top of a kopje. It is built of squared slabs of schist, and in symmetry and neatness of construction resembles, but is smaller than and lacks the ornamentation of, the well-known ruins north of the Limpopo. From it a good view can be obtained of the Palabora kopjes, where there are extensive old workings in copper ore, and where the peculiar copper "sticks" were formerly manufactured.

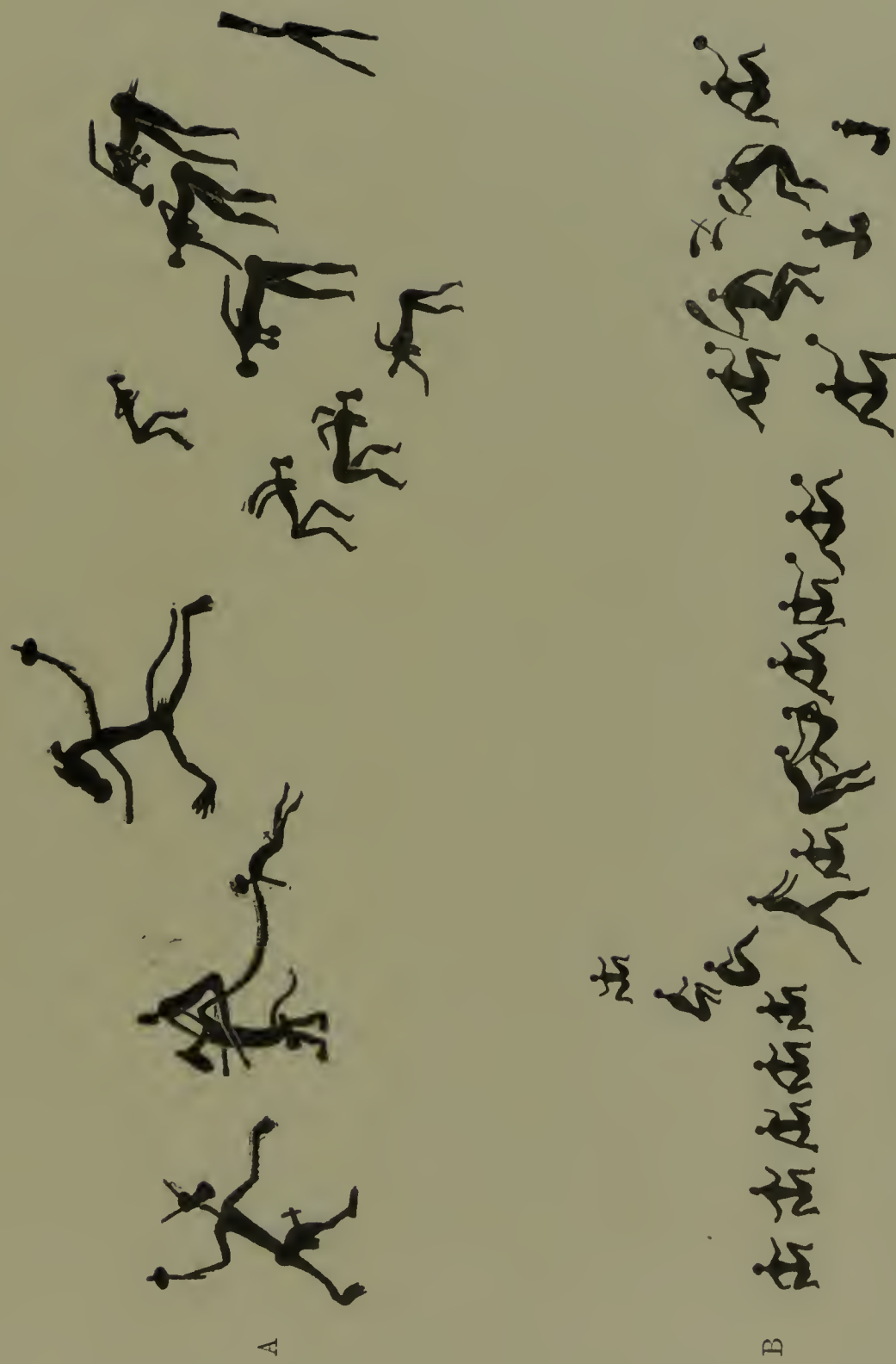


Fig. 29.—TWO PAINTINGS DEPICTING MYTH AND CUSTOM REFERRED TO IN STOW'S BOOK. After Stow. In collection of Prof. Young. (*One-quarter scale.*)

Also associated with these ruins are quantities of flat pieces of soft schist, in which, though otherwise untrimmed, conical holes have been chiselled. What useful purpose they could have served I am at a loss to conceive. I have seen, by the side of

FIG. 30.—TWO PICTOGRAPHS. After Stow. In collection of Prof. Young. (*One-quarter scale.*)

a prospecting trench, in the Marabastad hills, identical perforations on slabs of quite recently excavated schist.

Probably related to these is a perforated stone which I picked up in the Selous Valley. It is made out of a tabular piece of sandstone, and measures 20 by 18 by 7 c.m. Its shape and

crude finish at once differentiate it from the Solutric forms, and I have no doubt that it is of Bantu manufacture.

There is abundant evidence in the Steynsdorp Valley of the agricultural activities of its former Bantu inhabitants in the shape of piles of stones which have been sorted out of the soil. On the hillsides these are arranged in parallel rows in order to serve the additional purpose of holding back the soil in terraces.

Whether these people had abandoned the valley before the arrival of the European I am unaware. In the eighties a number of small gold-bearing quartz-veins were discovered there, and mining operations were started which, for a time, supported a small white population. Hence arose the now ruined village of Steynsdorp.

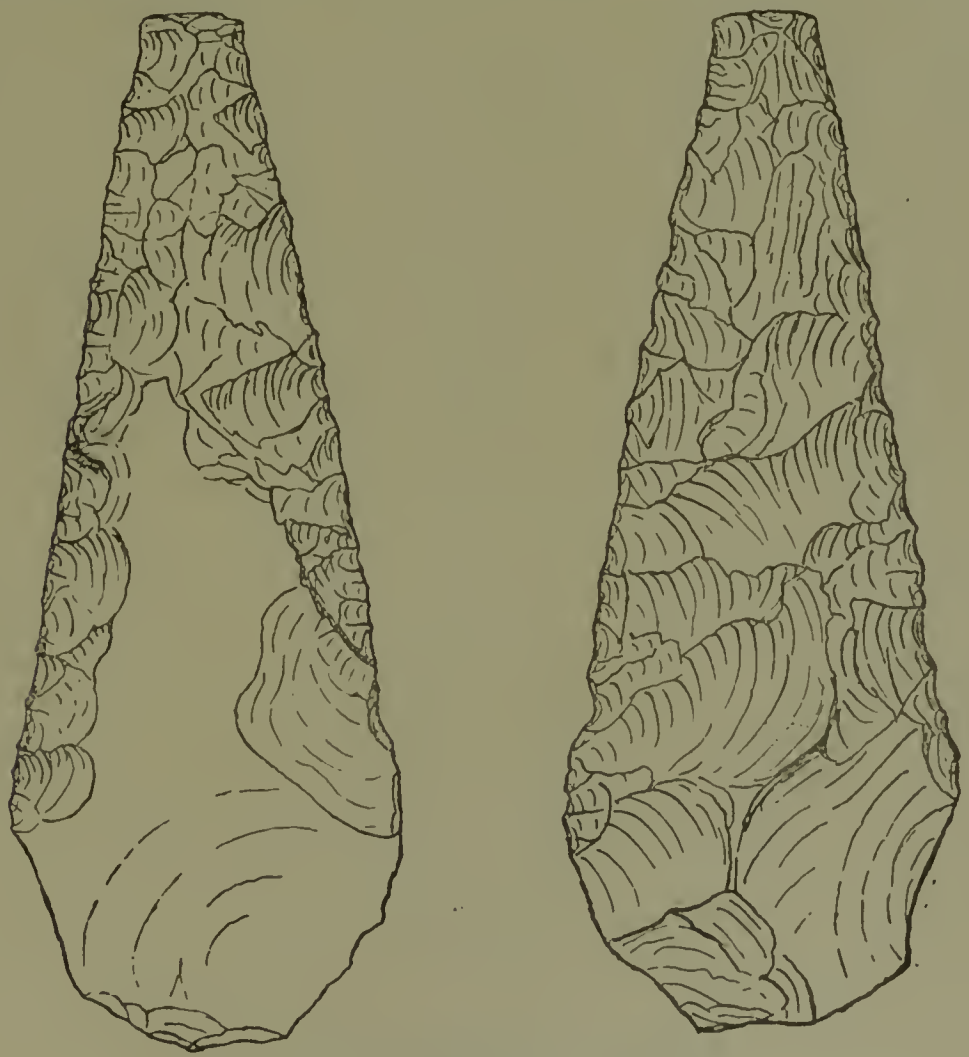


FIG. 31.—EMBABAAN VALLEY.

CHAPTER XII.

In the course of my examination of the petroglyphs in the south-western portion of the Orange River Colony, undertaken as member of the Commission* appointed by the Government to Report on the Aboriginal Petroglyphs and Paintings, I came across the following four occurrences of implements of the Riet and Modder group, which considerably extend their known distribution. The bulk of these implements are made of the same peculiar aphanite as those already described, and, like them, have suffered no alteration beyond a superficial change in colour.

Petrusburg.

The water hole on the east side of this village was evidently the centre of a Solutric settlement. On the heaps of soil which had been dug up in enlarging it, I found a number of the characteristic scrapers of this group. They are nearly all of the thick wedge-shaped type, including its long and short derivatives. I also obtained a fine chert example of the latter variety.

Together with these comparatively fresh and unworn implements, and contrasting strongly with them, were a few much worn, and more deeply discoloured, flakes of the same material. These possess an Eolithic style and quality of trimming, and must either be of Strepyic or of Acheulic age.

Koffyfontein.

There are some aboriginal chippings (*e.g.*, Fig. 32) on the kopje overlooking the Bantu location attached to this village. They mainly depict various wild animals such as the rhinoceros,

* The Commission consists of Professor R. B. Young of Johannesburg, Mr. T. N. Leslie of Vereeniging, and the writer.

eland, haartebeeste and ostrich. I obtained several of the characteristic scrapers of the group under consideration from in between the boulder-like outcrops on which they occur.

Fig. 32.—GROUP of OSTRICHES PECKED on a ROCK. Koffyfontein. (*One-third scale.*)

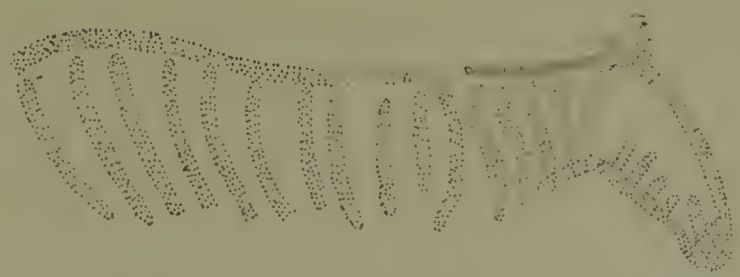


Fig. 33.—ZEBRA PECKED on ROCK. Biesjesfontein. (*One-third scale.*)

Fig. 34.—CHAIN of ANIMALS (Gnu, Koodoo, Quagga, Eland, &c.) ENGRAVED on ROCK.
Baviaanskranz. (*One-quarter scale.*)

Biesjesfontein.

On the kopje adjoining the homestead on this farm, which is 18 miles south-west of Koffyfontein, there are a large number of aboriginal chippings (*e.g.*, Fig. 33) and a few engravings like those of Fig. 34, in association with which I found some characteristic scrapers of this group.

Baviaanskranz.

This farm is situated 23 miles south-west of Biesjesfontein. There are some aboriginal chippings and engravings (*e.g.*, Fig. 34) on the randje along which the boundary between it and the farm Roodekop passes. In the flat between this randje and the homestead I obtained a number of the characteristic scrapers, as well as numerous very small chert, agate and jasper flakes, one or two of which had also been trimmed into scrapers.

APPENDIX.

In my introductory remarks I have referred to the valuable paper by my friends Hinton & Kennard, in which the stratigraphical proofs of the relative ages of the different groups of British stone implements are so clearly shown. Since that paper will not be readily accessible to the majority of my readers, and since my definition of the terms Eolithic, Palæolithic, and Neolithic is based on the data afforded by the deposits described therein, I have thought it desirable to give a brief account of them here. The relative positions of the different deposits in which the implements are found are shown in the accompanying section (Fig. A) from the Kent plateau to the River Thames. It is obvious that the gravels on the top of the plateau are older than the terraces of drift on the sides of the valley, and that the latter are in turn more ancient than the alluvium bordering the modern river.

Eolithic Plateau Gravels.

Scattered over the extreme south of Britain are some patches of very ancient gravel, occupying the tops of hills and small plateaux. They are generally considered to be the remnants of the drift deposited by rivers which were in existence long before the drainage system of the country had assumed its present form. Their exact geological age is uncertain, for, owing to their porous nature and great antiquity, any animal remains that may have been enclosed in them have, as a rule, since perished. There is one exception, however, for in a patch at Dewlish remains of an extinct species of elephant—the *Elephas meridionalis* of Nesti—have been found in some quantity. This occurrence, as will be seen later, though not fixing the exact minor geological epoch, is of great significance.

Now, these deposits have yielded some rudely chipped fragments of flint—in other words, Eoliths—which are claimed by many to be man's very earliest attempt to trim a piece of stone to a shape suitable for use as an implement.

The first and most important discovery of these Eoliths was made by Benjamin Harrison in the gravel on the Kent plateau. The following section, noted during a visit with Kennard to the pit sunk by Benjamin Harrison at South Ash, towards the end of 1902, will give a good idea of the nature of the deposit:—

Surface soil	1·5 ft.
Loam with scattered flints	1·5 „
Small flint pebbles in clayey and sandy matrix ...	2·0 „
Yellow, slightly clayey, sand, seen to	1·5 „

The pebble bed contained a number of angular flints, some of which had been chipped into implements. They were mostly externally opaque, stained a red-brown colour and highly glazed. The worked portion is in many cases of the same colour, but in others it is lighter, while in some it is quite translucent.

These implements—for such I believe them to be—consist of naturally broken pieces of flint, with secondary chipping along the edge, and resemble the scraping tools of later periods. In the complete and final summing up of the case, which constitutes one of his essays on *Controverted Questions of Geology*, Prestwich, who first brought Benjamin Harrison's discoveries before the scientific world, divides these implements into two groups: (1) Those in which the pieces of flint have been used with little modification; and (2) those in which they have been chipped into definite patterns. The identity of the South African and British Eoliths is so complete that the figures of specimens from the one area will serve to illustrate those from the other. This resemblance is further heightened in the case of the Leijfontein examples, by the similarity and condition of the material from which they are made.

Transition Deposit.

From its position the patch of gravel on Swanscombe Hill is probably intermediate in age between the plateau gravels and

the valley-drifts, but unfortunately no implements have been found in it.

Palæolithic Valley-Drifts.

The three succeeding terraces contain implements which differ very materially from those from the plateau gravels, indeed, they mark a complete revolution in the art of making flint implements. They are termed Palæolithic.

The scraping and allied tools, which still make up the bulk of the implements, are now all fashioned out of artificially-produced splinters or *flakes*. Man had no longer any need to search for conveniently shaped splinters, as he had now learnt to make them for himself. The method employed was to first obtain a flat surface by breaking off the end of a nodule, and then driving off slices at right angles to it by sharp blows with another stone. Still more characteristic of the Palæolithic period are the peculiar tongue-shaped implements. Eolithic man confined his work to the edge of the pieces of flint, but the tongue-shaped implements of Palæolithic man are skilfully chipped all over, sometimes into delicate tapering points and sometimes into thin flat blades, though more generally into a form intermediate between the two (Fig. B), the broader end being left unworked. Another characteristic, though comparatively rare, type is the almond-shaped implement, which resembles the average tongue-shaped implement, but has the edge continued right round the broad end. The relative abundance of these two types is reversed among the Palæolithic implements of South Africa. What these implements were used for is still a mystery, in spite of the attention that has been paid to them.

Only a few implements have been found in the Dartford Heath gravel, and they are characteristic large clumsy flakes and rude examples of the tongue-shaped type.

The Milton Street gravel, from which I obtained a large collection some years ago, has yielded great quantities of the typical tongue-shaped implements. In some of the excavations in it one can always find more flakes than one can possibly carry away with them, and there is not a single large flint to be

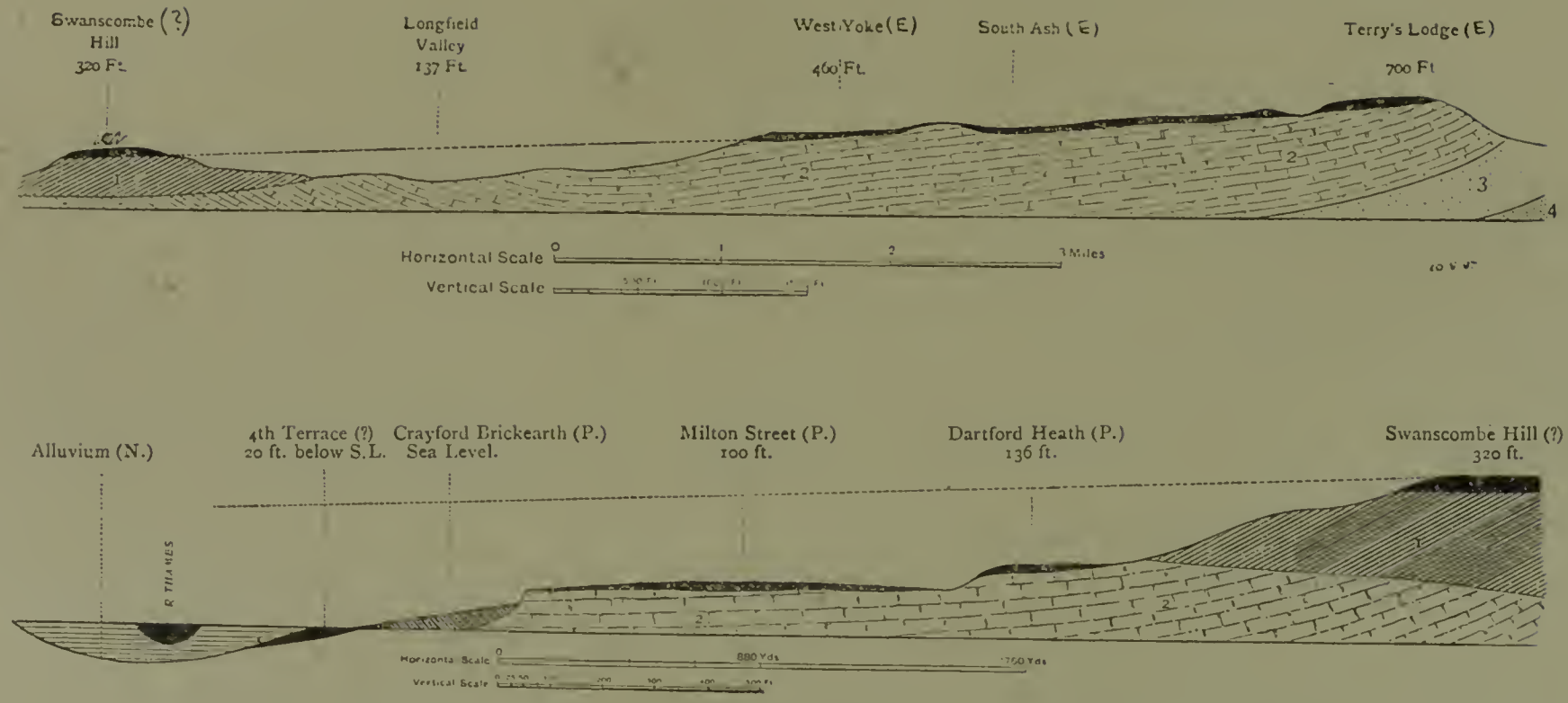


FIG. A.—SECTION FROM THE KENT PLATEAU TO THE RIVER THAMES.

After Hinton and Kennard.

E = *Eolithic.* P = *Palæolithic.* N = *Neolithic.*

found that has not been artificially chipped. The flakes are mostly rough and large, and none show any evidence of design in their shape. They would appear to be chiefly the result of the preliminary blocking out of the flints prior to their conversion into the tongue-shaped implements. The tongue-shaped implements are found in every stage of manufacture, ranging from the nodule from which only one or two flakes have been struck, to the finished implement. These last differ very much in size and exhibit unrivalled diversity of form. Failures and broken implements that have been repointed are common, the class of implement consisting of a large flake worked on one side and edge only is also well represented.

The Crayford brick-earth is noteworthy on account of Spurrell's discovery of an actual Palæolithic working place in it. Beneath the chalk cliff, against which the brick-earth abuts, he came across a dense layer of flakes. "The uppermost edge of the area covered by them is about 36 feet from the present surface, the lowest nearly 6 feet lower. This area was thickly covered with chips for the space of about 10 feet north and south, and so far as I know at present, 15 feet east and west . . . but I expect that it will be found to extend further. . . . The flakes are in most cases quite new and clean, always so on the lower side, very slightly discoloured on the upper." He was able to reconstruct some of the blocks of flint which had been split up into flakes by fitting together the pieces. They seem to have been intended for flake tools, being mostly skilfully produced long and narrow flakes (Fig. C.)

These three terraces have yielded the remains of a most remarkable assemblage of animals. In them, mingled with the Palæolithic implements are found the bones of beasts, of which some are now only met with in different and widely separated parts of the world, while others have completely disappeared from the face of the earth.

The extinct vertebrates comprise the trogontherium, two species of fallow-deer, three rhinoceroses, two elephants, a bear and a vole. The *elephas meridionalis* is no longer met with, its place being taken by the *elephas primigenius*.

Those of the existing species which did not survive the Palæolithic period in Britain, include such diversely distributed animals as the hippopotamus, spotted hyæna and lion, which are now practically confined to the continent of Africa, and the musk-ox, whose habitat at the present day is restricted to the Arctic regions of North America.

FIG. B.—TONGUE-SHAPED IMPLEMENT FROM MILTON STREET.

Another group, which includes two voles, the saiga and the souslik, is to-day characteristic of the Eurasian steppes. Two species of lemming are also comprised in this remarkable fauna: the one is now a purely Arctic animal, and the other survives only in Scandinavia.

Two more voles and a bison complete the list, while the beaver, urus, reindeer, wolf and bear, which appear to have lived on into the Neolithic period, must also be mentioned as interesting members of the Palæolithic fauna.

Of the invertebrates there is at least one extinct species of ostracod, pelecypod and gastropod, while there are several, which, though still living on the European mainland, are no longer inhabitants of Britain.

Transition Deposit.

The gravel of the fourth terrace shewn in the section is clearly intermediate in age between the valley-drifts and the alluvium, but unfortunately no implements have been found in it.

Neolithic Alluvium.

The newest deposits—the beds of clay, mud and peat, which make up the alluvial flats bordering the river—contain implements and other relics which mark yet another revolution in the manufacture of stone implements. They constitute a record of the Neolithic period of the Stone Age. These occur in the lowest and oldest layers only, for the upper beds range in age from the prehistoric bronze and iron epochs, right up to historic times. Of the implements found in the Neolithic alluvium, flakes and flake-tools still constitute the vast majority. The former are always neat and small and seldom attain the size of the average Palæolithic flake, while minute examples with three or more facets and a well-developed bulb of percussion, are not uncommon, which shows that the art of producing flakes had now reached its highest. The scraping tools bear a general resemblance to those of the earlier periods, but the average of excellence of workmanship is greater.

The other implements, however, are very different. The tongue- and almond-shaped implements of Palæolithic times are replaced by thin, symmetrical, and skilfully chipped javelin-heads, which are often neatly and uniformly notched on either side to facilitate the hafting; by beautifully finished daggers, not unlike the javelin-heads, but usually with a distinct handle worked at the end of the flat blade; and by axe-heads with a straight or slightly curved ground edge like that of a chisel. The last mentioned are usually more or less polished all over. While evidence of the knowledge of the bow appears for the first time in the shape of often exquisitely finished arrow-heads.

J. S. Phillips, 121 Fleet Street, E.C.—(Telephone: 1435 Holborn.)